

LABORATORY DATA CONSULTANTS, INC.

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November 17, 2003

Mr. Bruce Lewis ERM-West 2525 Natomas Park Drive Sacramento, CA 95833

SUBJECT: Validation of Data for Soil Samples Collected as Part of the Aerojet RI/FS

Project.

Dear Mr. Lewis,

Enclosed are the final validation reports for the analyses listed below.

SDG#	Analyses
P307257, P307335, P307437,	Semivolatiles by EPA Method 8270C, Polychlorinated
P307487, P307532, P308004,	Biphenyls by EPA Method 8082, Total Petroleum
P308025, P308035, P308047,	Hydrocarbons as Diesel by EPA Method 8015B Modified,
P308051, P308071, P308126,	Various Metals by EPA Methods 6010B and 6020,
P308139, P308140, P308192,	Mercury by EPA Method 7470A and 7471A, and
P308354, P308355, P308444,	Hexavalent Chromium by EPA Method 7196A
P309311	D)

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999,
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February, 1994
- Quality Assurance Project Plan, Aerojet Superfund Site, Aerojet-General Corporation, 29 May 2003, and
- Quality Assurance Project Plan, Aerojet Superfund Site, Aerojet-General Corporation, 14
 June 2002, Revised 25 September 2002

Please feel free to contact us if you have any questions.

Sincerely,

Nanny Estrada Senior Chemist

Lanny Gottada

ERM/Aerojet Data Validation Reports LDC# 0310-02A2 through 0310-02O2

Semivolatile Organic Compounds



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 14, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307257

Sample Identification

C32-SNS01

C32-SNS02

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The MS/MSD was performed on a non-site project sample. As such, no data were qualified based on these QC results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

5

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

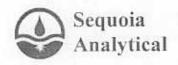
Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

6

P307257 BNA.DOC





Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C32-SNS01 (P307257-01) Soil	Sampled: 07/14/0	3 09:05	Received:	07/15/03 1	1:08			i di sa		
Glycerol tricaprylate	100			ug/kg	1	3070476	07/24/03	07/24/03	EPA 8270C	
Stigmast-4-en-3-one	200				-10		"			
Unknown 1	200			*			".	*		
Unknown 2	200				7	***				
Unknown alkane (C24-C28 range)	100				12977	"				
Unknown alkane (C28-C34 range) 1	400			*		(#	**		*	
Unknown alkane (C28-C34 range) 2	500			•				*	*	
Unknown alkane (C30-C34 range)	400			**	24.0	3,00				
Unknown PAH 1	200			-11	14		.11	. 16		
Unknown PAH 2	600						"	(8)		
C32-SNS02 (P307257-02) Soil	Sampled: 07/14/	03 09:20	Received:	07/15/03	11:08					
Cyclooctacosane	400			ug/kg	1	3070476	07/24/03	07/24/03	EPA 8270C	
Hexadecanoic acid, methyl ester	r 200			"	*		96			
Octadecenoic acid, methyl ester							**			
Sitosterol + Unknown	600			74		160	- 18	100		
Unknown 1	300			39	"					
Unknown aldehyde	200			- 30	*	100		1.7		
Unknown alkane (C24-C28 range)	200					*	"	1000	*	
Unknown alkane (C28-C32	500			141	*	**		**	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
range) Unknown alkane (C30-C34	500			: 65	"	*	4		*	
range) Unknown PAH 1	400			14		*		**	(8)	

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C32-SNS01 (P307257-01) Soil	Sampled: 07/14/	03 09:05	Received: (07/15/03 1	1:08					
Acenaphthene	ND	8.7	330	ug/kg	1	3070476	07/24/03	07/24/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	*	**	**	*	**		
Anthracene	ND	14	330			- 50	**	-10	#	
Azobenzene	ND	20	330		#	.99			*	
Benzidine	ND	1700	1700	.95	7.95	0.99	51	3.8		
Benzoic acid	ND	2.7	1700		2.0					
Benzo (a) anthracene	ND	7.6	330		**					
Benzo (b+k) fluoranthene (total)	ND	13	330		18		**	*	*	
Benzo (g,h,i) perylene	ND	8.8	330				n.			
Benzo (a) pyrene	ND	10	330	14	16		**		**	
Benzyl alcohol	ND	11	660	*			jt.		#0	
Bis(2-chloroethoxy)methane	ND	9.1	330							
Bis(2-chloroethyl)ether	ND	15	330	2.		*	*	*		
Bis(2-chloroisopropyl)ether	ND	16	330		275			*		
Bis(2-ethylhexyl)phthalate	37	9.3	330		*	*	-		10.	
4-Bromophenyl phenyl ether	ND	13	330					- 1		
Butyl benzyl phthalate	ND	11	330		**	- 10		- 1		
4-Chloroaniline	ND	58	660	16		0			-	
4-Chloro-3-methylphenol	ND	11	660	36	(9)		**		*	
2-Chloronaphthalene	ND	9.9	330	34				1.60		
2-Chlorophenol	ND	16	330	25	1000	100				
4-Chlorophenyl phenyl ether	ND	13	330					*	,,	
Chrysene	40	11	330			*		*	"	
Dibenz (a,h) anthracene	ND	18	330				**			
Dibenzofuran	ND	9.6	330				16			
Di-n-butyl phthalate	ND	12	330			*			*	
1.2-Dichlorobenzene	ND	16	330		"					
1.3-Dichlorobenzene	ND	14	330		10	*		. #		
1.4-Dichlorobenzene	ND	15	330				:#			
3,3'-Dichlorobenzidine	ND	44	660				8.5		- 7	
2,4-Dichlorophenol	ND	15	330	59					*	
Diethyl phthalate	ND	14	330	- "	"				**	
2,4-Dimethylphenol	ND	36	330				*	*		
Dimethyl phthalate	ND	11	330			#	**	1100	+	
4,6-Dinitro-2-methylphenol	ND	17	1700			-	59	100		
2,4-Dinitrophenol	ND	10					**		129	
2,4-Dinitrotoluene	ND	20			*:	*		10	. **	
2.6-Dinitrotoluene	ND	13	330	(4)	*	87				

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS Project Number: N/A

P307257 Reported: 08/19/03 12:17

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C32-SNS01 (P307257-01) Soil	Sampled: 07/14/	03 09:05	Received: (07/15/03 1	1:08					
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3070476	07/24/03	07/24/03	EPA 8270C	
Fluoranthene	110	11	330	**			*			
Fluorene	ND	7.9	330	W.	*	**			*	
Hexachlorobenzene	ND	15	330	**	(4)	34				
Hexachlorobutadiene	ND	17	330	#		. #				
Hexachlorocyclopentadiene	ND	10	330		(#)	*	н.	.00		
Hexachloroethane	ND.	17	330	*		525	0.5		*	
Indeno (1,2,3-cd) pyrene	ND	11	330				*		20	
Isophorone	ND	14	330	*						
2-Methylnaphthalene	ND	10	330							
2-Methylphenol	ND	16	330			**		*		
4-Methylphenol	ND	- 11	330						11	
Naphthalene	ND	13	330	*					**	
2-Nitroaniline	ND	17	1700		*	10	#:	*	*	
3-Nitroaniline	ND	18	1700						**	
4-Nitroaniline	ND	22	1700				95			
Nitrobenzene	ND	16	330			-	11			
2-Nitrophenol	ND	14	330	*						
4-Nitrophenol	ND	23	1700		*			*		
N-Nitrosodimethylamine	ND	16	330		16	-				
N-Nitrosodiphenylamine	ND	17	330				н.		**	
N-Nitrosodi-n-propylamine	ND	15	330	9.5	H		0		*	
Pentachlorophenol	ND	12	1700		18		#	*		
Phenanthrene	170	14	330	*	78.7		17			
Phenol	ND	12	330		H				20	
Pyrene	64	12	330				"			
1,2,4-Trichlorobenzene	ND	15	330	*	*				*	
2,4,5-Trichlorophenol	ND	14	330		-	-				
2,4,6-Trichlorophenol	ND	9.4	330	*	*	3 in			H.	
Surrogate: 2-Fluorophenol		50 %	11-12	20		0.00	"	7.		
Surrogate: Phenol-d6		67 %	16-1.	30		*	"	7		
Surrogate: Nitrobenzene-d5		61%	16-12	26		11	"			
Surrogate: 2-Fluorobiphenyl		72 %	28-1.	34						
Surrogate: 2,4,6-Tribromophene	d.	81%	51-1-	44			*	*		
Surrogate: Terphenyl-d14		80 %	64-1	19						

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS Project Number: N/A

P307257 Reported: 08/19/03 12:17

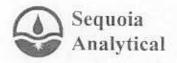
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C32-SNS02 (P307257-02) Soil	Sampled: 07/14	03 09:20	Received: (7/15/03 1	1:08					
Acenaphthene	ND	8.7	330	ug/kg	1	3070476	07/24/03	07/24/03	EPA 8270C	
Acenaphthylene	ND	7.6	330							
Anthracene	ND	14	330	(+)			7.6%	*		
Azobenzene	ND	20	330		н				2.81	
Benzidine	ND	1700	1700	(H.)	*		595	*		
Benzoic acid	ND	2.7	1700	37					**	
Benzo (a) anthracene	ND	7.6	330							
Benzo (b+k) fluoranthene (total)	ND	13	330	*		*	*		*	
Benzo (g,h,i) perylene	ND	8.8	330	44				**		
Benzo (a) pyrene	ND	10	330		. 11			**		
Benzyl alcohol	ND	1.1	660	- 10		-16	(4)	W.	// 66	
Bis(2-chloroethoxy)methane	ND	9.1	330	W.			100	10	((#)	
Bis(2-chloroethyl)ether	ND	15	330	400	*	.0	1.00		5/8/	
Bis(2-chloroisopropyl)ether	ND	16	330	100		30			17	
Bis(2-ethylhexyl)phthalate	150	9.3	330	9.0	"					
4-Bromophenyl phenyl ether	ND	13	330					*		
Butyl benzyl phthalate	ND	11	330	*				*		
4-Chloroaniline	ND	58	660			-	н.		н	
4-Chloro-3-methylphenol	ND	11	660	4			W	-		
2-Chloronaphthalene	ND	9.9	330		- 19		.01		H.)	
2-Chlorophenol	ND	16	330					1.1.2	**	
4-Chlorophenyl phenyl ether	ND	13	330				(4.7)		201	
Chrysene	37	11	330			38	*			
Dibenz (a,h) anthracene	ND	18	330	77						
Dibenzofuran	ND	9.6	330	"	7	"			*	
Di-n-butyl phthalate	ND	12	330		**	"		11		
1.2-Dichlorobenzene	ND	16	330	"			**	- 10	-	
1,3-Dichlorobenzene	ND	14	330	W.	i i			10		
1.4-Dichlorobenzene	ND	15	330	ii.	0.0		60			
3,3'-Dichlorobenzidine	ND	44	660		и.	-				
2,4-Dichlorophenal	ND	15	330		* 1		#1	:5		
Diethyl phthalate	ND	14	330		(#3)	*	*			
2,4-Dimethylphenol	ND	36	330							
Dimethyl phthalate	ND	11	330		**	,				
4.6-Dinitro-2-methylphenol	ND	17	1700			- 0			*	
2,4-Dinitro-2-metayiphenor	ND	10	1700				н			
2,4-Dinitrophenol	ND	20	330		197					
2,6-Dinitrotoluene	ND	13	330	*				19	**	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C32-SNS02 (P307257-02) Soil	Sampled: 07/14/	03 09:20	Received:	07/15/03	11:08					
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3070476	07/24/03	07/24/03	EPA 8270C	
Fluoranthene	38	11	330				*			
Fluorene	ND	7.9	330	*	.10	"	ii.	*		
Hexachlorobenzene	ND	15	330	11	**	*	-	*	-	
Hexachlorobutadiene	ND	17	330	(C)	*	*				
Hexachlorocyclopentadiene	ND	10	330	8.	50	36			(*)	
Hexachloroethane	ND	17	330	100		185			(4)	
Indeno (1,2,3-cd) pyrene	ND	11	330	n .	."				1977	
Isophorone	ND	14	330		**				100	
2-Methylnaphthalene	ND	10	330		"	*		*		
2-Methylphenol	ND	16	330		11				48	
4-Methylphenol	ND	11	330	- KC		.76				
Naphthalene	ND	13	330	0.5	.0				1.0	
2-Nitroaniline	ND	17	1700	600			(4)			
3-Nîtroaniline	ND	18	1700	9.		18.	1.5		(197)	
4-Nitroaniline	ND	22	1700						200	
Nitrobenzene	ND	16	330			"				
2-Nitrophenol	ND	14	330	"	"	*		*	*	
4-Nitrophenol	ND	23	1700	0			*			
N-Nitrosodimethylamine	ND	16	330	- #	- 36	n.			1.0	
N-Nitrosodiphenylamine	ND	17	330	16.7	**			*		
N-Nitrosodi-n-propylamine	ND	15	330	(6)	(9)					
Pentachlorophenol	ND	12	1700	0.9	- 0	.0.				
Phenanthrene	ND	14	330	9.0		15	- 10		553	
Phenol	ND	12	330			W				
Pyrene	36	12	330		*					
1,2,4-Trichlorobenzene	ND	15	330	#				**		
2,4,5-Trichlorophenol	ND	14	330		*	*	16			
2,4,6-Trichlorophenol	ND	9.4	330	#			H			
Surrogate: 2-Fluorophenol		50 %	11-1.	20						
Surrogate: Phenol-d6		69 %	16-1.	30						
Surrogate: Nitrobenzene-d5		65 %	16-1	26			*	*	*	
Surrogate: 2-Fluorobiphenyl		74%	28-1.	34				*	*	
Surrogate: 2,4,6-Tribromopheno	d	84%	51-1	44				*	-	
Surrogate: Terphenyl-d14		80%	64-1	10						

Sequoia Analytical - Petaluma



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 21, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307437

Sample Identification

FCS-SB01-2.5

FCS-SB01-20

10D-SB03-2.5

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits. As the MS/MSD was performed on a parent sample that was not chosen for validation, no data were qualified based on these QC results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within OC limits.

4

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

5

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P307437

No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307437

No Sample Data Qualified in this SDG

6

P307437 BNA.DOC





Project: Aerojet RI/FS Project Number: N/A P307437 Reported: 08/13/03 16:24

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result MI	Reporting DL Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FCS-SB01-2.5 (P307437-01) Soil	Sampled: 07/21/03	09:59 Received	: 07/21/0	3 16:41					
No TICs found	ND	10	ug/kg	1	3070610	07/29/03	08/01/03	EPA 8270C	
FCS-SB01-5 (P307437-02) Soil	Sampled: 07/21/03 10	0:05 Received:	07/21/03	16:41					
Sulfur, mol. (S8)	100	10	ug/kg	1	3070610	07/29/03	08/01/03	EPA 8270C	
FCS-SB01-10 (P307437-03) Soil	Sampled: 07/21/03	10:15 Received	: 07/21/0	3 16:41					
No TICs found	ND	10	ug/kg	1	3070610	07/29/03	08/01/03	EPA 8270C	
FCS-SB01-15 (P307437-04) Soil	Sampled: 07/21/03	10:20 Received	: 07/21/0	3 16:41			العراب		
No TICs found	ND	10	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
FCS-SB01-20 (P307437-05) Soil	Sampled: 07/21/03	10:27 Received	: 07/21/0	3 16:41					
No TICs found	ND	9	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
10D-SB03-1 (P307437-06) Soil	Sampled: 07/21/03 12	:52 Received:	07/21/03	16:41					
No TICs found	ND	10	ug/kg	1	3070610	07/29/03	08/01/03	EPA 8270C	
10D-SB03D-1 (P307437-07) Soil	Sampled: 07/21/03	12:52 Received	: 07/21/0	3 16:41					
No TICs found	ND	10	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
10D-SB03-2.5 (P307437-08) Soil	Sampled: 07/21/03	12:58 Received	: 07/21/0	3 16:41					
Tebuthiuron	200	10	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
Unknown alkane 1	200	10	#	"			*		
Unknown alkane 2	100	10	1(0)	75	199	1950		."	
Unknown alkane 3	100	10	197		25	3.0			
Unknown cycloalkane 1	100	10			*	7	*		
Unknown cycloalkane 2	200	10	- 10	-		125	75	1.7	





Project: Aerojet RI/FS Project Number: N/A P307437 Reported: 08/13/03 16:24

Project Manager: Bruce Lewis

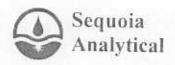
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FCS-SB01-2.5 (P307437-01) Soil	Sampled: 07/	21/03 09:59	Receive	d: 07/21/0	3 16:41					
Acenaphthene	ND	8.7	330	ug/kg	1	3070610	07/29/03	08/01/03	EPA 8270C	
Acenaphthylene	ND	7.6	330		77		123			
Anthracene	ND	14	330	1.9	**.	*	1#			
Azobenzene	ND	20	330				250			
Benzidine	ND	1700	1700	(0)			1.00			
Benzoic acid	ND	2.7	1700	**			*	"	7.5	
Benzo (a) anthracene	ND	7.6	330	**				"		
Benzo (b+k) fluoranthene (total)	ND	13	330	**	**	*		*		
Benzo (g,h,i) perylene	ND	8.8	330	**	*					
Benzo (a) pyrene	ND	10	330		**					
Benzyl alcohol	ND	11	660	11	#					
Bis(2-chloroethoxy)methane	ND	9.1	330	**	**		*		- 10	
Bis(2-chloroethyl)ether	ND	15	330		*	**			#1	
Bis(2-chloroisopropyl)ether	ND	16	330		"	**	*			
Bis(2-ethylhexyl)phthalate	64	9,3	330					"		
4-Bromophenyl phenyl ether	ND	13	330			**				
Butyl benzyl phthalate	ND	11	330			*		**		
4-Chloroaniline	ND	58	660				145	in .	- 40	
4-Chloro-3-methylphenol	ND	11	660		*	*		2	140	
2-Chloronaphthalene	ND	9.9	330		- îi	"				
2-Chlorophenol	ND	16	330	110	· W		-		242	
4-Chlorophenyl phenyl ether	ND	13	330	10	ii ii	.11		и.	747	
Chrysene	ND	11	330	(6.7	-98	**	(+)	#	1360	
Dibenz (a,h) anthracene	ND	18	330	4	**	.11	4.1	W.	4	
Dibenzofuran	ND	9.6	330		196	*	7/87	¥.	1500	
Di-n-butyl phthalate	ND	12	330		*	*	590	*	. 40	
1,2-Dichlorohenzene	ND	16	330				/#X	*	(20)	
1,3-Dichlorobenzene	ND	14	330				17.00	#1	7.96	
1.4-Dichlorobenzene	ND	15	330				7.00		1780	
3,3°-Dichlorobenzidine	ND	44	660		*			96	(4)	
2,4-Dichlorophenol	ND	15	330	10.7		- 14	7.00	**		
Diethyl phthalate	ND	14	330	67.			1.00	10		
2,4-Dimethylphenol	ND	36	330			- #			- 91	
Dimethyl phthalate	ND	11	330	W1	*			*	10.	
4,6-Dinitro-2-methylphenol	ND	17	1700	0.7	39			*	*	
2,4-Dinitrophenol	ND	10	1700					15.06	*	
2.4-Dinitrotoluene	ND	20	330			.0		.0	9.5	

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P307437 Reported: 08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FCS-SB01-2.5 (P307437-01) Soil	Sampled: 07	/21/03 09:59	Receive	d: 07/21/0	3 16:41					110123
2,6-Dinitrotoluene	ND	13	330	ug/kg	1	3070610	07/29/03	08/01/03	EDA BATOS	
Di-n-octyl phthalate	ND	11	330	*			07729703	08/01/03	EPA 8270C	
Fluoranthene	ND	11	330	(H)						
Fluorene	ND	7.9	330	- 99		W)	**			
Hexachlorobenzene	ND	15	330	29	60	"		123		
Hexachlorobutadiene	ND	17	330	109		10	4	2.00		
Hexachlorocyclopentadiene	ND	10	330	179						
Hexachloroethane	ND	17	330					577		
Indeno (1,2,3-cd) pyrene	ND	11	330				**	1.44		
Isophorone	ND	14	330					220		
2-Methylnaphthalene	ND	10	330		160	н.				
2-Methylphenol	ND	16	330	,,	н.	н.				
4-Methylphenol	ND	11	330							
Naphthalene	ND	13	330					*		
2-Nitroaniline	ND	17	1700			(000)				
3-Nitroaniline	ND	18	1700					**	ii.	
4-Nitroaniline	ND	22	1700	,,						
Nitrobenzene	ND	16	330							
2-Nitrophenol	ND	14	330					98		
4-Nitrophenol	ND	23	1700			. #11		- 11		
N-Nitrosodimethylamine	ND	16	330	*						
N-Nitrosodiphenylamine	ND	17	330			18				
N-Nitrosodi-n-propylamine	ND	15	330							
Pentachlorophenol	ND	12	1700	*				144		
Phenanthrene	ND	14	330			- Her			***	
Phenol	ND	12	330							
Pyrene	ND	12	330							
,2,4-Trichlorobenzene	ND	15	330		w					
2,4,5-Trichlorophenol	ND	14	330		**					
2,4,6-Trichlorophenol	ND	9.4	330							
Surrogate: 2-Fluorophenol	7,10	68 %	11-12	-	100					
Surrogate: Phenol-d6		79 %	200				ir.			
Surrogate: Nitrobenzene-d5		79 %	16-13							
Surrogate: 2-Fluorobiphenyl		85 %	28-13					242		
Surrogate: 2,4,6-Tribromophenol		97 %	28-13- 51-14							
Surrogate: 2,4,0-11toromopnenoi Surrogate: Terphenyl-d14		105 %	64-11				*		* = =	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307437 Reported: 08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FCS-SB01-15 (P307437-04) Soil	Sampled: 07/	21/03 10:20	Received	1: 07/21/0	3 16:41			7777	THE STATE OF THE S	
Surrogate: Phenol-d6		81%	16-1.	30		3070610	07/29/03	08/02/03	EPA 8270C	
Surrogate: Nitrobenzene-d5		83 %	16-12			"	#	00/02/03	# #	
Surrogate: 2-Fluorobiphenyl		85 %	28-13	3.4		31			40	
Surrogate: 2,4,6-Tribromophenol		95 %	51-14	14			1.6		W.	
Surrogate: Terphenyl-d14		110 %	64-11	9		**		*	Ter.	
FCS-SB01-20 (P307437-05) Soil	Sampled: 07/	21/03 10:27	Received	: 07/21/0	3 16:41					
Acenaphthene	ND	7.5	280	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
Acenaphthylene	ND	6.6	280	-6/16		#	07723703	#	EFA 8270C	
Anthracene	ND	12	280	4.5	*	W.				
Azobenzene	ND	17	280	10	74.7		24			
Benzidine	ND	1500	1500	19		W.	4	74		
Benzoic acid	ND	2.3	1500	N-		**		200	911 ***	
Benzo (a) anthracene	ND	6.5	280	56		*	-	144		
Benzo (b+k) fluoranthene (total)	ND	12	280	196	+	40	W	140	-	
Benzo (g,h,i) perylene	ND	7.6	280		+	65	78			
Benzo (a) pyrene	ND	8.6	280			60		150		
Benzyl alcohol	ND	9.6	570	30		ii.				
Bis(2-chloroethoxy)methane	ND	7.8	280					147		
Bis(2-chloroethyl)ether	ND	13	280	- 11	H .					
Bis(2-chloroisopropyl)ether	ND	13	280				10	0.00		
Bis(2-ethylhexyl)phthalate	31	8.0	280		(4)	1.0		1961	W.	J
4-Bromophenyl phenyl ether	ND	11	280			3.60	W .		ii ii	
Butyl benzyl phthalate	ND	9.7	280		100	3.00	.00	41	**	
4-Chloroaniline	ND	50	570			196	- N	(4)		
4-Chloro-3-methylphenol	ND	9.3	570	25	191	100		1/41	*	
2-Chloronaphthalene	ND	8.5	280			100	9.	(4)		
2-Chlorophenal	ND	14	280	18	(19)	. #			**	
4-Chlorophenyl phenyl ether	ND	11	280	395	1.0	0.0			**	
Chrysene	ND	9.3	280	.0.		100		140		
Dibenz (a,h) anthracene	ND	16	280	Water	1.00	::#:::		1.0	-	
Dibenzofuran	ND	8.2	280	36		(4)	*	34	iii.	
Di-n-butyl phthalate	ND	10	280		100	100	*			
1,2-Dichlorobenzene	ND	14	280	26	1961		360			
1,3-Dichlorobenzene	ND	12	280	25		180		1.0	10	
1,4-Dichlorobenzene	ND	13	280						*	
3,3'-Dichlorobenzidine	ND	38	570				0			

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS Project Number: N/A

P307437 Reported: 08/13/03 16:24

Project Manager: Bruce Lewis

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FCS-SB01-20 (P307437-05) Soil	Sampled: 07/2	1/03 10:27	Received	I: 07/21/0.	3 16:41			200 de # - 400 de	MARKET	1,1016.0
2,4-Dichlorophenol	ND	13	280	ug/kg	1	3070610	07/29/03	08/02/03	TDA GARAGE	_
Diethyl phthalate	ND	12	280	"		"	#	08/02/03	EPA 8270C	
2,4-Dimethylphenol	ND	31	280	#10					120	
Dimethyl phthalate	ND	9.7	280				- 11			
4,6-Dinitro-2-methylphenol	ND	15	1500	-	90					
2,4-Dinitrophenol	ND	8.8	1500				59			
2,4-Dinitrotoluene	ND	17	280		"					
2,6-Dinitrotoluene	ND	12	280			10				
Di-n-octyl phthalate	ND	9.7	280	,,		#0				
Fluoranthene	ND	9.7	280							
Fluorene	ND	6.8	280							
Texachlorobenzene	ND	13	280							
fexachlorobutadiene	ND	15	280					77.00		
dexachlorocyclopentadiene	ND	8.6	280							
Hexachloroethane	ND	15	280					-		
ndeno (1,2,3-cd) pyrene	ND	9.6	280					#1		
sophorone	ND	12	280					11/2		
2-Methylnaphthalene	ND	8.8	280							
2-Methylphenol	ND	14	280							
l-Methylphenol	ND	9.8	280			*		**		
Naphthalene	ND	12	280	100		**				
-Nitroaniline	ND	15	1500						- "	
-Nitroaniline	ND	15	1500	11						
-Nitroaniline	ND	19	1500							
Vitrobenzene	ND	14	280	4	74					
-Nitrophenol	ND	12	280	*				100		
-Nitrophenol	ND	20	1500		0.00					
N-Nitrosodimethylamine	ND	14	280			in .				
N-Nitrosodiphenylamine	ND	14	280				**			
N-Nitrosodi-n-propylamine	ND	13	280			100			,	
'entachlorophenol	ND	10	1500							
henanthrene	ND	12	280			74		-	2	
henol	ND	11	280		40	47				
yrene	ND	10	280		140					
,2,4-Trichlorobenzene	ND	13	280		40	1700		1		
,4,5-Trichlorophenol	ND	12	280	i.		4.5	2			

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307437 Reported; 08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting 1,imit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
FCS-SB01-20 (P307437-05) Soil	Sampled: 07/	21/03 10:27	Received	1: 07/21/0	3 16:41			0.000,000000	1040-0000	
2,4,6-Trichlorophenol	ND	8.1	280	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
Surrogate: 2-Fluorophenol		71 %	11-12	20				*	"	
Surrogate: Phenol-d6		80 %	16-13							
Surrogate: Nitrobenzene-d5		86 %	16-12	26		#		w		
Surrogate: 2-Fluorobiphenyl		87.%	28-13	4		**				
Surrogate: 2,4,6-Tribromophenol		93 %	51-14	14		*	*			
Surrogate: Terphenyl-d14		107 %	64-11	9		7	100	9		
10D-SB03-1 (P307437-06) Soil	Sampled: 07/21	/03 12:52	Received:	07/21/03	16:41					
Acenaphthene	ND	8.7	330	ug/kg	1	3070610	07/29/03	08/01/03	EPA 8270C	
Acenaphthylene	ND	7.6	330						"	
Anthracene	ND	14	330		*	"				
Azobenzene	ND	20	330		*			5.00		
Benzidine	ND	1700	1700							
Benzoie acid	ND	2.7	1700		-			100		
Benzo (a) anthracene	ND	7.6	330	-	-					
Benzo (b+k) fluoranthene (total)	ND	13	330	**						
Benzo (g,h,i) perylene	ND	8.8	330	7					CH.	
Benzo (a) pyrene	ND	10	330		W.					
Benzyl alcohol	ND	11	660							
Bis(2-chloroethoxy)methane	ND	9.1	330				*		-	
Bis(2-chloroethyl)ether	ND	15	330	100	107			*		
Bis(2-chloroisopropyl)ether	ND	16	330							
Bis(2-cthylhexyl)phthalate	ND	9.3	330			in .				
4-Bromophenyl phenyl ether	ND	13	330	2	4			*		
Butyl benzyl phthalate	ND	11	330		174					
4-Chloroaniline	ND	58	660	**				44		
4-Chloro-3-methylphenol	ND	11	660	W	14	n.				
2-Chloronaphthalene	ND	9.9	330	- 10				46		
2-Chlorophenol	ND	16	330		- 1	· ·				
4-Chlorophenyl phenyl ether	ND	13	330	ii.						
Chrysene	ND	11	330	36						
Dibenz (a,h) anthracene	ND	18	330		14	-				
Dibenzofuran	ND	9.6	330		24					
Di-n-butyl phthalate	ND	12	330	ii.		100				
1,2-Dichlorobenzene	ND	16	330	11						

Sequoia Analytical - Petaluma





Project Number: N/A
Project Manager: Bruce Lewis

P307437 Reported: 08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SB03D-1 (P307437-07) Soil	Sampled: 07/21/03 12:52		Received	1: 07/21/0.	3 16:41					
Pentachlorophenol	ND	12	1700	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	_
Phenanthrene	ND	14	330					11	60 M 62 / UC	
Phenol	ND	12	330			36.	1000	*	10.00	
Pyrene	ND	12	330	583	76	10	- 44		141	
1,2,4-Trichlorobenzene	ND	15	330	(97)	**	(6)	(4)		4	
2,4,5-Trichlorophenol	ND	14	330		100	*		**		
2,4,6-Trichlorophenol	ND	9.4	330				**	0.0		
Surrogate: 2-Fluorophenol		59 %	11-12	20						
Surrogate: Phenol-d6		71.%	16-13	10						
Surrogate: Nitrobenzene-d5		77%	16-12	26						
Surrogate: 2-Fluorobiphenyl		74 %	28-13	14		#		*		
Surrogate: 2,4,6-Tribromophenol		65 %	51-14	14						
Surrogate: Terphenyl-d14		98 %	64-11	9					*	
10D-SB03-2.5 (P307437-08) Soil	Sampled: 07/	21/03 12:58	Received	Received: 07/21/0.						
Acenaphthene	ND	8.7	330	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
Acenaphthylene	ND	7.6	330				"	*	"	
Anthracene	ND	14	330	."		**	-		**	
Azobenzene	ND	20	330	"	0.		*	(9)		
Benzidine	ND	1700	1700		10			W.)		
Benzoic acid	ND	2.7	1700			100		. 107		
Benzo (a) anthracene	ND	7.6	330					.00		
Benzo (b+k) fluoranthene (total)	ND	13	330							
Benzo (g,h,i) perylene	ND	8.8	330			1111	**	5#3	**	
Benzo (a) pyrene	ND	10	330		2.00	10.00		100		
Benzyl alcohol	ND	11	660					-		
3is(2-chloroethoxy)methane	ND	9.1	330		*	91				
3is(2-chloroethyl)ether	ND	15	330		**				*	
3is(2-chloroisopropyl)ether	ND	16	330					70	-	
3is(2-ethylhexyl)phthalate	49	9.3	330							1
-Bromophenyl phenyl ether	ND	13	330	- 16						
Butyl benzyl phthalate	ND	11	330		- 2			,		
-Chloroaniline	ND	58	660				,,			
-Chloro-3-methylphenol	ND	11	660			**		79		
-Chloronaphthalene	ND	9.9	330							
-Chlorophenol	ND	16	330			**				
-Chlorophenyl phenyl ether	ND	13	330	**						

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS Project Number: N/A

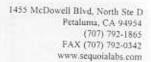
P307437 Reported: 08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SB03-2.5 (P307437-08) Soil	Sampled: 07/	21/03 12:58	Received	1: 07/21/0	3 16:41		15000000	111111111111111111111111111111111111111	NATIONES.	11010
Chrysene	ND	11	330	ug/kg	1	3070610	07/29/03	00/03/03		_
Dibenz (a,h) anthracene	ND	18	330		- 1	2010010	07729703	08/02/03	EPA 8270C	
Dibenzofuran	ND	9.6	330							
Di-n-butyl phthalate	ND	12	330							
1,2-Dichlorobenzene	ND	16	330	н			**		20	
1,3-Dichlorobenzene	ND	14	330							
1,4-Dichlorobenzene	ND	15	330			**				
3,3'-Dichlorobenzidine	ND	44	660			**				
2,4-Dichlorophenol	ND	15	330	**						
Diethyl phthalate	ND	14	330							
2,4-Dimethylphenol	ND	36	330						,	
Dimethyl phthalate	ND	11	330					5.00		
4,6-Dinitro-2-methylphenol	ND	17	1700							
2,4-Dinitrophenol	ND	10	1700							
2.4-Dinitrotoluene	ND	20	330				*			
2.6-Dinitrotoluene	ND	13	330							
Di-n-octyl phthalate	ND	11	330			w	W	10000		
Fluoranthene	ND	11	330		w					
Fluorene	ND	7.9	330	**						
Hexachlorobenzene	ND	15	330							
Hexachlorobutadiene	ND	17	330							
-lexachlorocyclopentadiene	ND	10	330							
Hexachloroethane	ND	17	330			78				
ndeno (1,2,3-cd) pyrene	ND	11	330							
sophorone	ND	14	330							
-Methylnaphthalene	ND	10	1000				7	."		
-Methylphenol	ND	0.00	330			*		"		
-Methylphenol		16	330	4	14					
Vaphthalene	ND	11	330						2	
-Nitroaniline	ND	13	330						*	
-Nitroaniline	ND	17	1700	# . 27	100	4			*	
	ND	18	1700	W.	242	- 10		*		
-Nitroaniline	ND	22	1700	"		11461	*	"		
Vitrobenzene	ND	16	330		141			,,		
-Nitrophenol	ND	14	330	"	(744.7)		*	"		
-Nitrophenol	ND	23	1700		1967	*	u.		-	
N-Nitrosodimethylamine	ND	16	330		*		**	*	*	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P307437 Reported: 08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
10D-SB03-2.5 (P307437-08) Soil	Sampled: 07/	21/03 12:58	Receive	d: 07/21/0	3 16:41				1807150	3.440
N-Nitrosodiphenylamine	ND	17	330	ug/kg	1	3070610	07/29/03	08/02/03	ED 1 0270C	-
N-Nitrosodi-n-propylamine	ND	15	330				11	00/02/03	EPA 8270C	
Pentachlorophenol	ND	12	1700			,,			74	
Phenanthrene	ND	14	330		**	41				
Phenol	ND	12	330				-			
Pyrene	ND	12	330			W.)		24		
1,2,4-Trichlorobenzene	ND	15	330						,	
2,4,5-Trichlorophenol	ND	14	330			н.				
2,4,6-Trichlorophenol	ND	9,4	330							
Surrogate: 2-Fluorophenol		60 %	11-12	20	_	W		20		
Surrogate: Phenol-d6		72 %	16-13			iii)				
Surrogate: Nitrobenzene-d5		73 %	16-12			65	- 1			
Surrogate: 2-Fluorobiphenyl		83 %	28-13							
Surrogate: 2,4,6-Tribromophenol		91 %	51-14			196				
Surrogate: Terphenyl-d14		97%	64-119						,,	
10D-SB03-5 (P307437-09) Soil S	Sampled: 07/21		deceived:		16:41				3.0	
Acenaphthene	ND	8.7	330	ug/kg	1	3070610	07/29/03	08/02/03	ED COMO	
Acenaphthylene	ND	7.6	330	#B #B		#	*	08/02/03	EPA 8270C	
Anthracene	ND	14	330			w				
Azobenzene	ND	20	330							
Benzidine	ND	1700	1700							
Benzoic acid	ND	2.7	1700							
Benzo (a) anthracene	ND	7.6	330	8						
Benzo (b+k) fluoranthene (total)	ND	13	330	**	17.	**			**	
Benzo (g,h,i) perylene	ND	8.8	330	40					7.	
Benzo (a) pyrene	ND	10	330	¥3.	144	-				
Benzyl alcohol	ND	11	660							
3is(2-chloroethoxy)methane	ND	9.1	330	*						
3is(2-chloroethyl)ether	ND	15	330							
Bis(2-chloroisopropyl)ether	ND	16	330				2		2	
Bis(2-ethylhexyl)phthalate	ND	9.3	330						2	
-Bromophenyl phenyl ether	ND	13	330			74				
Butyl benzyl phthalate	ND	11	330					9 1		
-Chloroaniline										
	ND	58	660				17677			
-Chloro-3-methylphenol	ND	11	660		*	*				

Sequoia Analytical - Petaluma

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 24, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307487

Sample Identification

35D-SB25-2.5

Introduction

This data review covers one soil sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The MS/MSD was performed on a non-site project sample. As such, no data were qualified based on these QC results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P307487

No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307487

No Sample Data Qualified in this SDG

6

P307487 BNA.DOC





Project Number: N/A
Project Manager: Bruce Lewis

P307487 Reported: 08/13/03 16:30

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB25-2.5 (P307487-12) Soil	Sampled: 07/24/	03 10:49	Received	: 07/24/0	3 16:30					
Unknown aromatic 1	1000		10	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
Unknown aromatic 2	700		10	***	**		-			
Unknown aromatic 3	2000		10	1,000	*		16	*	121	
Unknown aromatic 4	700		10	10	*	*	H	*	-	
Unknown cholesterol 1	1000		10	**	*	*	- 10	"	-	
Unknown cycloalkane 1	1000		10		*	*		W.		
Unknown cycloalkane 2	600		10	. **	*	*	H	-#	(4)	
Unknown cycloalkane 3	1000		10	197	H.		16	#	(41)	
Unknown cycloalkane 4	200		10	(9)		(6)			1.40	
Unknown halogenated alkane 1	300		10	(#)	*	*		*	980	
35D-SB25-10 (P307487-13) Soil	Sampled: 07/24/0	03 11:11	Received:	07/24/03	16:30			95		
No TICs found	ND		10	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
35D-SB25-35 (P307487-14) Soil	Sampled: 07/24/0	03 13:09	Received:	07/24/03	3 16:30					
No TICs found	ND		10	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
35D-SB25-40 (P307487-15) Soil	Sampled: 07/24/0	03 13:43	Received	07/24/03	3 16:30					
No TICs found	ND		10	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
35D-SB25-45E (P307487-16) Wat	ter Sampled: 07/	/24/03 14:	28 Recei	ed: 07/2	4/03 16:30)'				
No TICs found	ND		10	ug/l	1	3070597	07/28/03	08/06/03	EPA 8270C	
35D-SB25-45 (P307487-17) Soil	Sampled: 07/24/6	03 15:15	Received:	07/24/03	16:30					
No TICs found	ND		10	ug/kg	(0)	3070610	07/29/03	08/02/03	EPA 8270C	

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P307487 Reported: 08/13/03 16:30

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	
35D-SB25-2.5 (P307487-12) Soil	Sampled: 07/	24/03 10:49	Received	Received: 07/24/03 16:30							
Accnaphthene	ND	8.7	330	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C		
Acenaphthylene	ND	7.6	330					#	#		
Anthracene	ND	14	330		**			500	-		
Azobenzene	ND	20	330								
Benzidine	ND	1700	1700								
Benzoic acid	ND	2.7	1700		*						
Benzo (a) anthracene	ND	7.6	330		40				- "		
Benzo (b+k) fluoranthene (total)	ND	13	330		65				OH		
Benzo (g,h,i) perylene	ND	8.8	330		u.	W-					
Benzo (a) pyrene	ND	10	330		-						
Benzyl alcohol	ND	11	660	- 11			w				
Bis(2-chloroethoxy)methane	ND	9.1	330				**				
Bis(2-chloroethyl)ether	ND	15	330	-	1.0						
Bis(2-chloroisopropyl)ether	ND	16	330					*			
Bis(2-ethylhexyl)phthalate	60	9.3	330		1.4						
4-Bromophenyl phenyl ether	ND	13	330	- 4	**		*				
Butyl benzyl phthalate	ND	11	330		240						
4-Chloroaniline	ND	58	660	596							
4-Chloro-3-methylphenol	ND	11	660	76				-			
2-Chloronaphthalene	ND	9.9	330	W							
2-Chlorophenol	ND	16	330	- G					-		
4-Chlorophenyl phenyl ether	ND	13	330			100					
Chrysene	45	11	330		100		W.	*		J	
Dibenz (a,h) anthracene	ND	18	330	9.		500					
Dibenzofuran	ND	9.6	330		100		2				
Di-n-butyl phthalate	ND	12	330	W.		16.5	*		*		
1,2-Dichlorobenzene	ND	16	330	11	40				20		
1,3-Dichlorobenzene	ND	14	330	10				-	W.		
1,4-Dichlorobenzene	ND	15	330	ú:	2340	(96)					
3,3'-Dichlorobenzidine	ND	44	660			44					
2,4-Dichlorophenol	ND	15	330	0.	100	1.6					
Diethyl phthalate	58	14	330		141						
2,4-Dimethylphenol	ND	36	330			**				J	
Dimethyl phthalate	ND	11	330	n		*		3.0			
4,6-Dinitro-2-methylphenol	ND	17	1700	W.	- + -	(4)					
2,4-Dinitrophenol	ND	10	1700		**	*	14	210			
2,4-Dinitrotoluene	ND	20	330	16							

Sequoia Analytical - Petaluma





Project: Acrojet RI/FS Project Number: N/A P307487 Reported: 08/13/03 16:30

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

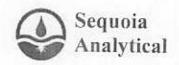
Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
35D-SB25-2.5 (P307487-12) Soil	Sampled: 07/2	24/03 10:49	Received	1: 07/24/0.	3 16:30			10-20-0000	1-107-108-1	25/98
2,6-Dinitrotoluene	ND	13	330	ug/kg	1	3070610	07/29/03	08/02/03	EPA 8270C	
Di-n-octyl phthalate	ND	11	330	,			11	"	# #	
Fluoranthene	ND	11	330					- 0		
Fluorene	ND	7.9	330					**		
Hexachlorobenzene	ND	15	330		*					
Hexachlorobutadiene	ND	17	330		*					
Hexachlorocyclopentadiene	ND	10	330			**				
Hexachloroethane	ND	17	330							
Indeno (1,2,3-cd) pyrene	ND	11	330	*	*					
sophorone	ND	14	330							
2-Methylnaphthalene	ND	10	330			*				
2-Methylphenol	ND	16	330							
4-Methylphenol	ND	11	330	*						
Naphthalene	ND	13	330		160					
2-Nitroaniline	ND	17	1700						"	
3-Nitroaniline	ND	18	1700							
4-Nitroaniline	ND	22	1700	10						
Vitrobenzene	ND	16	330	11	141					
2-Nitrophenol	ND	14	330	и.	40					
-Nitrophenol	ND	23	1700		141					
N-Nitrosodimethylamine	ND	16	330	2						
N-Nitrosodiphenylamine	ND	17	330							
N-Nitrosodi-n-propylamine	ND	15	330	2		-	#			
Pentachlorophenol	ND	12	1700		160	4				
henanthrene	ND	14	330	ê.	14	170				
Phenol	ND	12	330	W.	100					
yrene	ND	12	330	40	100		4			
,2,4-Trichlorobenzene	ND	15	330							
2,4,5-Trichlorophenol	ND	14	330			- 1				
2,4,6-Trichlorophenol	ND	9.4	330	iii						
Surrogate: 2-Fluorophenol		55 %	11-12	n			-	(M)		
Surrogate: Phenol-d6		68 %	16-13					*		
Surrogate: Nitrobenzene-d5		68 %	16-13				*	with		
Surrogate: 2-Fluorobiphenyl		78 %	28-13					#		
Surrogate: 2,4,6-Tribromophenol		68 %	51-14					W-1		
Surrogate: Terphenyl-d14		82 %	64-11							

Sequoia Analytical - Petaluma







ND

No TICs found

Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307487 Reported: 08/13/03 16:30

Tentatively Identified Compounds by GC/MS - Quality Control Sequoia Analytical - Petaluma

Analyte	Result	MDL.	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 3070597 - EPA 3520B	LigLiquid										
Blank (3070597-BLK1)					Prepared:	07/28/03	Analyzed	· 08/06/03			
No TICs found	ND		10	ug/I	riepiaca	01120/03	rannyzeu	, 00/00/03			
Batch 3070610 - EPA 3550A	Sonication										
Blank (3070610-BLK1)					Prepared:	07/29/03	Analyzed	08/01/03			
					a repaired.	011-67102	CREEKI ASSOCIA	CM9/MA/93			

10 ug/kg

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 25, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307532

Sample Identification

35D-SB26-6

35D-SB26-11

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P307532

No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307532

No Sample Data Qualified in this SDG

6

P307532 BNA.DOC





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P307532 Reported: 08/15/03 14:38

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB26-6 (P307532-01) Soil	Sampled: 07/25/03	16:06	Received:	07/28/03	17:25					
No TICs found	ND		10	ug/kg	1	3070671	07/31/03	08/07/03	EPA 8270C	
35D-SB26-11 (P307532-02) Soil	Sampled: 07/25/0	3 16:19	Received	: 07/28/0	3 17:25					
No TICs found	ND		10	ug/kg	1	3070671	07/31/03	08/07/03	EPA 8270C	
35D-SB26-15E (P307532-03) Wa	iter Sampled: 07/	25/03 16	:31 Recei	ved: 07/2	8/03 17:25					
No TICs found	ND		10	ug/l	1	3070657	07/30/03	08/07/03	EPA 8270C	
35D-SB26-15 (P307532-04) Soil	Sampled: 07/25/0	3 16:49	Received	: 07/28/0	3 17:25					
No TICs found	ND		10	ug/kg	1	3070671	07/31/03	08/08/03	EPA 8270C	
35D-SB26-30 (P307532-06) Soil	Sampled: 07/28/0	3 10:44	Received	: 07/28/0	3 17:25					
Unknown alkane 1	300		10	ug/kg	1	3070671	07/31/03	08/08/03	EPA 8270C	
35D-SB26-35 (P307532-07) Soil	Sampled: 07/28/0	3 11:05	Received:	07/28/0	3 17:25					
No TICs found	ND		10	ug/kg	1	3070671	07/31/03	08/08/03	EPA 8270C	
35D-SB26-35D (P307532-08) Soi	il Sampled: 07/28	/03 11:0	5 Receive	d: 07/28	03 17:25					
No TICs found	ND		10	ug/kg	1	3070671	07/31/03	08/08/03	EPA 8270C	
35D-SB26-40 (P307532-09) Soil	Sampled: 07/28/0	3 11:39	Received:	07/28/0	3 17:25					
No TICs found	ND		10	ug/kg	1	3070671	07/31/03	08/07/03	EPA 8270C	
35D-SB26-45 (P307532-10) Soil	Sampled: 07/28/0	3 12:02	Received:	07/28/0	3 17:25					
No TICs found	ND		10	ug/kg	1	3070671	07/31/03	08/08/03	EPA 8270C	







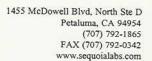
Project: Aerojet RI/FS Project Number: N/A P307532 Reported: 08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB26-6 (P307532-01) Soil	Sampled: 07/25/	03 16:06	Received:	07/28/03	17:25					
Acenaphthene	ND	8.7	330	ug/kg	1	3070671	07/31/03	08/07/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	"		"	*	"	0.	
Anthracene	ND	14	330	"				n	2.00	
Azobenzene	ND	20	330		"	*	**			
Benzidine	ND	1700	1700	"		**	"	"	(100)	
Benzoic acid	ND	2.7	1700	"		"	"			
Benzo (a) anthracene	ND	7.6	330	"	"	•		"	*	
Benzo (b+k) fluoranthene (total)	ND	13	330		*	"	**			
Benzo (g,h,i) perylene	ND	8.8	330		"		.,	"	**	
Benzo (a) pyrene	ND	10	330							
Benzyl alcohol	ND	11	660		*			"		
Bis(2-chloroethoxy)methane	ND	9.1	330						**	
Bis(2-chloroethyl)ether	ND	15	330					"	(.9)	
Bis(2-chloroisopropyl)ether	ND	16	330					"		
Bis(2-ethylhexyl)phthalate	ND	9.3	330					,,		
4-Bromophenyl phenyl ether	ND	13	330						н —	
Butyl benzyl phthalate	ND	11	330			,,			"	
4-Chloroaniline	ND	58	660	"			10			
4-Chloro-3-methylphenol	ND	11	660	**						
2-Chloronaphthalene	ND	9.9	330							
2-Chlorophenol	ND	16	330	"		"	,,			
4-Chlorophenyl phenyl ether	ND	13	330			**	**		,,	
Chrysene	ND	11	330				**			
Dibenz (a,h) anthracene	ND	18	330			**		#		
Dibenzofuran	ND	9.6	330		ii.					
Di-n-butyl phthalate	ND	12	330			**				
1,2-Dichlorobenzene	ND	16	330			,,		,,		
1,3-Dichlorobenzene	ND	14	330							
1,4-Dichlorobenzene	ND	15	330		i ii					
3,3'-Dichlorobenzidine	ND	44	660	00						
2,4-Dichlorophenol	ND	15	330	#6	ni l	•			**	
Diethyl phthalate	ND	14	330			ű				
2,4-Dimethylphenol	ND	36		ne.		•	74			
2,4-Dimethyl phthalate	ND ND	11	330 330							
4,6-Dinitro-2-methylphenol										
	ND	17	1700			#: #:				
2,4-Dinitrophenol	ND	10	1700	**	8.1		*	"	(*)	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307532 Reported: 08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB26-6 (P307532-01) Soil	Sampled: 07/25/	/03 16:06	Received:	07/28/03	17:25					
2,4-Dinitrotoluene	ND	20	330	ug/kg	1	3070671	07/31/03	08/07/03	EPA 8270C	
2,6-Dinitrotoluene	ND	13	330	"			п	"	"	
Di-n-octyl phthalate	ND	11	330	**			**		n	
Fluoranthene	ND	11	330	**				**		
Fluorene	ND	7.9	330	**	n			н		
Hexachlorobenzene	ND	15	330					**	,,	
Hexachlorobutadiene	ND	17	330		"		,,			
Hexachlorocyclopentadiene	ND	10	330			,,			,,	
Hexachloroethane	ND	17	330				**	,		
Indeno (1,2,3-cd) pyrene	ND	11	330	**		**		,,		
Isophorone	ND	14	330		"					
2-Methylnaphthalene	ND	10	330							
2-Methylphenol	ND	16	330		**	,		**		
4-Methylphenol	ND	11	330	,,		*	.,			
Naphthalene	ND	13	330	**	"	,,	n			
2-Nitroaniline	ND	17	1700	**			*	,,		
3-Nitroaniline	ND	18	1700		,,	11	п			
4-Nitroaniline	ND	22	1700				**	,,		
Nitrobenzene	ND	16	330		"			11	201 249 11 0	
2-Nitrophenol	ND	14	330	,,						
4-Nitrophenol	ND	23	1700	**				**	***	
N-Nitrosodimethylamine	ND	16	330	н		**	**			
N-Nitrosodiphenylamine	ND	17	330	**		**	**			
N-Nitrosodi-n-propylamine	ND	15	330		m					
Pentachlorophenol	ND	12	1700		**					
Phenanthrene	ND	14	330	"	iii					
Phenol	ND	12	330	W.	•				,,	
Pyrene	ND	12	330	**		**			3.00 3 .6 0	
1,2,4-Trichlorobenzene	ND	15	330			"				
2,4,5-Trichlorophenol	ND	14	330							
2,4,6-Trichlorophenol	ND	9.4	330					"		
Surrogate: 2-Fluorophenol	ND								NWA	VIII
Surrogate: 2-rtuorophenot Surrogate: Phenol-d6		63 %	11-12			"	"	"	"	
Surrogate: Frienot-ao Surrogate: Nitrobenzene-d5		72 %	16-13				n	"	"	
		76 %	16-12	71		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		77 %	28-13			"	n	"	"	
Surrogate: 2,4,6-Tribromophenol		77 %	51-14	4		"	"	"	u.	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P307532 Reported: 08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB26-6 (P307532-01) Soil	Sampled: 07/25/0	03 16:06	Received:	07/28/03	17:25					
Surrogate: Terphenyl-d14		99 %	64-1	19		3070671	07/31/03	08/07/03	EPA 8270C	
35D-SB26-11 (P307532-02) Soil	Sampled: 07/25	/03 16:19	Received	: 07/28/0	3 17:25					
Acenaphthene	ND	8.7	330	ug/kg	1	3070671	07/31/03	08/07/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	**			,,		"	
Anthracene	ND	14	330			*	*			
Azobenzene	ND	20	330			"			"	
Benzidine	ND	1700	1700		**		"			
Benzoic acid	ND	2.7	1700		,,				**	
Benzo (a) anthracene	ND	7.6	330			"			11	
Benzo (b+k) fluoranthene (total)	ND	13	330		**	*	**		"	
Benzo (g,h,i) perylene	ND	8.8	330	**		"	*	<u>,,</u>	n ·	
Benzo (a) pyrene	ND	10	330			,,	,,	*		
Benzyl alcohol	ND	11	660		"		,,	"	,,	
Bis(2-chloroethoxy)methane	ND	9.1	330			,,				
Bis(2-chloroethyl)ether	ND	15	330		**	"				
Bis(2-chloroisopropyl)ether	ND	16	330	,,	**					
Bis(2-ethylhexyl)phthalate	ND	9.3	330				"			
4-Bromophenyl phenyl ether	ND	13	330							
Butyl benzyl phthalate	ND	11	330			"				
4-Chloroaniline	ND	58	660		,,	,,		**		
4-Chloro-3-methylphenol	ND	11	660							
2-Chloronaphthalene	ND	9.9	330		"	,,				
2-Chlorophenol	ND	16	330			H.				
4-Chlorophenyl phenyl ether	ND	13	330					ä		
Chrysene Chrysene	ND	11	330		,,					
Dibenz (a,h) anthracene	ND	18				n.				
Dibenzofuran	ND	9.6	330 330		,				5. 45 %	
Di-n-butyl phthalate	ND							"	*	
1,2-Dichlorobenzene	ND ND	12	330			"		"		
1,3-Dichlorobenzene	ND	16	330				*			
		14	330					"		
1,4-Dichlorobenzene 3,3'-Dichlorobenzidine	ND	15	330			*		"		
	ND	44	660			**				
2,4-Dichlorophenol	ND	15	330			*	"	**	"	
Diethyl phthalate	ND	14	330	**	"	u			**	
2,4-Dimethylphenol	ND	36	330	н		**		"	"	
Dimethyl phthalate	ND	11	330	"	"	*	•			

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307532 Reported: 08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB26-11 (P307532-02) Soil	Sampled: 07/2	25/03 16:19	Received	07/28/03	3 17:25					
4,6-Dinitro-2-methylphenol	ND	17	1700	ug/kg	1	3070671	07/31/03	08/07/03	EPA 8270C	
2,4-Dinitrophenol	ND	10	1700	,,	*		"		"	
2,4-Dinitrotoluene	ND	20	330	*			,,		**	
2,6-Dinitrotoluene	ND	13	330	**		m	**			
Di-n-octyl phthalate	ND	11	330							
Fluoranthene	ND	11	330			m				
Fluorene	ND	7.9	330	*		**		"		
Hexachlorobenzene	ND	15	330							
Hexachlorobutadiene	ND	17	330	"	,,					
Hexachlorocyclopentadiene	ND	10	330		,,		*			
Hexachloroethane	ND	17	330	"		"				
Indeno (1,2,3-cd) pyrene	ND	11	330		**					
Isophorone	ND	14	330	,,	**	,,			m.	
2-Methylnaphthalene	ND	10	330	,,	"	,,				
2-Methylphenol	ND	16	330	er			,,	7		
4-Methylphenol	ND	11	330	**		*	,,			
Naphthalene	ND	13	330			,,	"			
2-Nitroaniline	ND	17	1700			"	**	,,		
3-Nitroaniline	ND	18	1700			,,		,,		
4-Nitroaniline	ND	22	1700				"	,,		
Nitrobenzene	ND	16	330					,,		
2-Nitrophenol	ND	14	330	,,				,,	н	
4-Nitrophenol	ND	23	1700	,,				n		
N-Nitrosodimethylamine	ND	16	330			,,				
N-Nitrosodiphenylamine	ND	17	330			**	,,			
N-Nitrosodi-n-propylamine	ND	15	330	"						
Pentachlorophenol	ND	12	1700			"	"			
Phenanthrene	ND	14	330	"	**	"	"			
Phenol	ND	12	330		,,	11		#		
Pyrene	ND	12	330	,,				**		
1,2,4-Trichlorobenzene	ND	15	330		**			**		
2,4,5-Trichlorophenol	ND	14	330		**					
2,4,6-Trichlorophenol	ND	9.4	330		**					
Surrogate: 2-Fluorophenol		67 %	11-12	0		"	,,	,,	,,	
Surrogate: Phenol-d6		76 %	16-13	0		"	"	"	"	
Surrogate: Nitrobenzene-d5		80 %	16-12	6		"	"	"	,,	

Sequoia Analytical - Petaluma







Project Number: N/A
Project Manager: Bruce Lewis

P307532 Reported: 08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB26-11 (P307532-02) Soil	Sampled: 07/	25/03 16:19	Received	: 07/28/03	3 17:25					
Surrogate: 2-Fluorobiphenyl		82 %	28-13	34		3070671	07/31/03	08/07/03	EPA 8270C	
Surrogate: 2.4.6-Tribromophenol		85 %	51-14	14		"	"	"	"	
Surrogate: Terphenyl-d14		107%	64-11	9		"	"	"	"	
35D-SB26-15E (P307532-03) Wat	ter Sampled:	07/25/03 16:3	1 Recei	ved: 07/2	8/03 17:25					
Acenaphthene	ND	1.3	11	ug/l	1	3070657	07/30/03	08/07/03	EPA 8270C	
Acenaphthylene	ND	1.5	11	•		"	11		11	
Anthracene	ND	0.63	11		"		*	,,	0.0	
Azobenzene	ND	0.66	21	"		**		,,	и;	
Benzidine	ND	3.3	53		"			"	115	
Benzoic acid	ND	4.1	53	•	"	,		,,		
Benzo (a) anthracene	ND	0.46	11		"	"	9			
Benzo (b+k) fluoranthene (total)	ND	1.2	11	**		"	,,			
Benzo (g,h,i) perylene	ND	0.67	11	*		*		.,		
Benzo (a) pyrene	ND	0.92	11	*	"	**	**	,,	(,40)	
Benzyl alcohol	ND	4.1	21		*	"	•		1.00	
Bis(2-chloroethoxy)methane	ND	1.2	11	"	"	"	•			
Bis(2-chloroethyl)ether	ND	1.6	11		**	"				
Bis(2-chloroisopropyl)ether	ND	1.6	11						н.	
Bis(2-ethylhexyl)phthalate	ND	3.0	11	"	"		•			
4-Bromophenyl phenyl ether	ND	0.74	11	"	"	,,	•		"	
Butyl benzyl phthalate	ND	2.8	11			"				
4-Chloroaniline	ND	0.58	21		п	"				
4-Chloro-3-methylphenol	ND	2.4	21					"		
2-Chloronaphthalene	ND	1.5	11		**					
2-Chlorophenol	ND	0.33	11	n		w				
4-Chlorophenyl phenyl ether	ND	1.0	11	н		"				
Chrysene	ND	0.47	11							
Dibenz (a,h) anthracene	ND	0.58	11			**				
Dibenzofuran	ND	1.2	11	u				**		
Di-n-butyl phthalate	ND	1.2	11		**					
1,2-Dichlorobenzene	ND	1.9	11		**			**		
1,3-Dichlorobenzene	ND	1.9	11				**			
1,4-Dichlorobenzene	ND	1.8	11				*			
3,3'-Dichlorobenzidine	ND	3.0	21				,			
2,4-Dichlorophenol	ND	0.49	11	п		**				
Diethyl phthalate	ND	0.44	11							

Sequoia Analytical - Petaluma



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 29, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308004

Sample Identification

37D-SB01-6

Introduction

This data review covers one soil sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

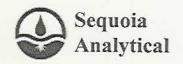
Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P308004

No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308004

No Sample Data Qualified in this SDG





Project : Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308004 Reported: 08/19/03 16:23

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
35D-SB26-20 (P308004-01) Soil	Sampled: 07/28/	03 16:15	Received	: 07/29/0	3 17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/13/03	EPA 8270C	
35D-SB26-25 (P308004-02) Soil	Sampled: 07/28/	03 16:42	Received	: 07/29/0	3 17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/13/03	EPA 8270C	
37D-SB01-6 (P308004-04) Soil	Sampled: 07/29/0	3 10:39	Received:	07/29/03	17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/14/03	EPA 8270C	
37D-SB01-10 (P308004-05) Soil	Sampled: 07/29/	03 10:46	Received	: 07/29/03	3 17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/14/03	EPA 8270C	
37D-SB01-15E (P308004-06) Wa	ater Sampled: 07	//29/03 1	1:00 Recei	ived: 07/2	29/03 17:05	5				
No TICs found	ND		10	ug/l	1	3080056	08/05/03	08/13/03	EPA 8270C	
37D-SB01-15 (P308004-07) Soil	Sampled: 07/29/	03 11:11	Received	07/29/03	3 17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/14/03	EPA 8270C	
37D-SB01-20 (P308004-08) Soil	Sampled: 07/29/	03 11:32	Received:	07/29/03	3 17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/14/03	EPA 8270C	
37D-SB01-25 (P308004-09) Soil	Sampled: 07/29/	03 11:56	Received:	07/29/03	3 17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/14/03	EPA 8270C	
37D-SB01-30 (P308004-10) Soil	Sampled: 07/29/	03 12:17	Received:	07/29/03	3 17:05					
No TICs found	ND		300	ug/kg	1	3080047	08/05/03	08/13/03	EPA 8270C	





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P308004 Reported: 08/19/03 16:23

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
37D-SB01-6 (P308004-04) Soil	Sampled: 07/29/0	3 10:39	Received:	07/29/03	17:05					
Acenaphthene	ND	8.7	330	ug/kg	1	3080047	08/05/03	08/14/03	EPA 8270C	
Acenaphthylene	ND	7.6	330		"		*			
Anthracene	ND	14	330	n	**	**	"	**	n,	
Azobenzene	ND	20	330			**	**	**	,	
Benzidine	ND	1700	1700		.11	**	m .	36	n.	
Benzoic acid	ND	2.7	1700			"			· m	
Benzo (a) anthracene	ND	7.6	330	**	**				n	
Benzo (b+k) fluoranthene (total)	ND	13	330	"		"				
Benzo (g,h,i) perylene	ND	8.8	330	"			"			
Benzo (a) pyrene	ND	10	330	w	11	"	u u	"		
Benzyl alcohol	ND	11	660	**	н.	н	н	*		
Bis(2-chloroethoxy)methane	ND	9.1	330	,,		#	#	,,,	200	
Bis(2-chloroethyl)ether	ND	15	330		"		"			
Bis(2-chloroisopropyl)ether	ND	16	330	"	11					
Bis(2-ethylhexyl)phthalate	ND	9.3	330	"						
1-Bromophenyl phenyl ether	ND	13	330	Ti.				,,		
Butyl benzyl phthalate	ND	11	330	**		rii.	H			
I-Chloroaniline	ND	58	660	n	100	- 11	::#3		590	
-Chloro-3-methylphenol	ND	11	660	**	11	**				
2-Chloronaphthalene	ND	9.9	330		**	· u				
2-Chlorophenol	ND	16	330	,,				"		
-Chlorophenyl phenyl ether	ND	13	330		u					
Chrysene	ND	11	330	**						
Dibenz (a,h) anthracene	ND	18	330			н	w			
Dibenzofuran	ND	9.6	330				· m	W.		
Di-n-butyl phthalate	ND	12	330	11		н				
,2-Dichlorobenzene	ND	16	330			**				
,3-Dichlorobenzene	ND	14	330	u						
,4-Dichlorobenzene	ND	15	330							
3,3'-Dichlorobenzidine	ND	44	660	n	:10					
,4-Dichlorophenol	ND	15	330	н		*			w	
Diethyl phthalate	ND	14	330				.00	"		
,4-Dimethylphenol	ND	36	330				,,		n	
Dimethyl phthalate	ND	11	330			*		**		
,6-Dinitro-2-methylphenol	ND	17	1700			**	**	11		
,4-Dinitrophenol	ND	10	1700		w				**	
,4-Dinitrotoluene	ND	20	330							
,6-Dinitrotoluene	ND	13	330							

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308004 Reported: 08/19/03 16:23

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
37D-SB01-6 (P308004-04) Soil	Sampled: 07/29	/03 10:39	Received: (7/29/03	17:05					
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3080047	08/05/03	08/14/03	EPA 8270C	
Fluoranthene	ND	11	330	"		,			"	
Fluorene	ND	7.9	330	"		"				
Hexachlorobenzene	ND	15	330	**	"	**	Ü	"		
Hexachlorobutadiene	ND	17	330	**		н	*	n		
Hexachlorocyclopentadiene	ND	10	330		"	п	Ħ			
Hexachloroethane	ND	17	330			"	n	"		
Indeno (1,2,3-cd) pyrene	ND	11	330		"	**	"	"		
Isophorone	ND	14	330		"					
2-Methylnaphthalene	ND	10	330		н	"				
2-Methylphenol	ND	16	330						w	
4-Methylphenol	ND	11	330			11.	m,		n.	
Naphthalene	ND	13	330			**	H	**		
2-Nitroaniline	ND	17	1700	**		**	**		n.	
3-Nitroaniline	ND	18	1700		"					
4-Nitroaniline	ND	22	1700				"			
Nitrobenzene	ND	16	330	**			ú.			
2-Nitrophenol	ND	14	330	<u>n</u>	,,	115	10			
4-Nitrophenol	ND	23	1700		100	m.	H	н.		
N-Nitrosodimethylamine	ND	16	330				и.	HE.	200	
N-Nitrosodiphenylamine	ND	17	330	**		*				
N-Nitrosodi-n-propylamine	ND	15	330	**			7	"		
Pentachlorophenol	ND	12	1700	11		11		**		
Phenanthrene	ND	14	330		(Fee)					
Phenol	ND	12	330							
Pyrene	ND	12	330							
,2,4-Trichlorobenzene	ND	15	330				**			
2,4,5-Trichlorophenol	ND	14	330			**				
2,4,6-Trichlorophenol	ND	9.4	330		н					
Surrogate: 2-Fluorophenol		64%	11-120)		"		"	"	
Surrogate: Phenol-d6		73 %	16-130)		"	"	"	"	
Surrogate: Nitrobenzene-d5		74 %	16-120	5			"	"	"	
Surrogate: 2-Fluorobiphenyl		76 %	28-13-	1		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		83 %	51-14			"	"	"	"	
Surrogate: Terphenyl-d14		108 %	64-119			"	"	,,	п	

Sequoia Analytical - Petaluma



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 30, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308025

Sample Identification

37D-SB01-6

36D-SB01-2.5

36D-SB01-5

36D-SB02-0

36D-SB02-3

36D-SB02-6

Introduction

This data review covers six soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks

3

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS

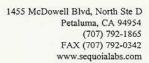
Project Number: N/A

Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

Analyte	Result N	Reporting MDL Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
37D-SB01-6 (P308025-01) Soil	Sampled: 07/30/03 (9:52 Received:	07/31/03	14:10					
No TICs found	ND	300	ug/kg	1	3080086	08/13/03	08/15/03	EPA 8270C	
36D-SB01-2.5 (P308025-02) Soil	Sampled: 07/30/03	12:20 Received	1: 07/31/0	3 14:10					
Unknown Alkane	2000	1000	ug/kg	2	3080086	08/13/03	08/15/03	EPA 8270C	
36D-SB01-5 (P308025-03) Soil	Sampled: 07/30/03	2:26 Received:	07/31/03	14:10					
No TICs found	ND	300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB01-11 (P308025-04) Soil	Sampled: 07/30/03	12:42 Received	1: 07/31/0	3 14:10					
No TICs found	ND	300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB01-15E (P308025-05) Wa	ter Sampled: 07/3	0/03 12:47 Rece	ived: 07/3	31/03 14:10)				
No TICs found	ND	10	ug/l	1	3080056	08/05/03	08/13/03	EPA 8270C	
36D-SB01-15 (P308025-06) Soil	Sampled: 07/30/03	13:03 Received	1: 07/31/0	3 14:10					
No TICs found	ND	300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB01-20 (P308025-07) Soil	Sampled: 07/30/03	13:27 Received	1: 07/31/0	3 14:10					
No TICs found	ND	300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB01-25 (P308025-08) Soil	Sampled: 07/30/03	13:43 Received	1: 07/31/0	3 14:10		20000			
No TICs found	ND	300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB01-30 (P308025-09) Soil	Sampled: 07/30/03	14:53 Received	1: 07/31/0	3 14:10					
No TICs found	ND	300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	





Project: Aerojet RI/FS

Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB01-35 (P308025-10) Soil	Sampled: 07/30	/03 15:12	Received	: 07/31/0	3 14:10					
No TICs found	ND		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB01-40 (P308025-11) Soil	Sampled: 07/30	/03 15:31	Received	: 07/31/0	3 14:10					
No TICs found	ND		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB01D-40 (P308025-12) Soi	l Sampled: 07/.	30/03 15:3	1 Receive	ed: 07/31	/03 14:10					
No TICs found	ND		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB02-0 (P308025-13) Soil	Sampled: 07/31/	03 10:09	Received:	07/31/03	14:10					
No TICs found	ND		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB02-3 (P308025-14) Soil	Sampled: 07/31/	03 10:23	Received:	07/31/03	14:10					
Sulfur, mol. (S8)	500		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB02-6 (P308025-15) Soil	Sampled: 07/31/	03 10:35	Received:	07/31/03	14:10			-1300		
No TICs found	ND		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB02-15E (P308025-16) Wa	ter Sampled: 0	7/31/03 11	:04 Recei	ved: 07/3	31/03 14:10					
No TICs found	ND		10	ug/l	1	3080056	08/05/03	08/13/03	EPA 8270C	
36D-SB02-15 (P308025-17) Soil	Sampled: 07/31	/03 11:18	Received	: 07/31/0	3 14:10					
No TICs found	ND		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB02-20 (P308025-18) Soil	Sampled: 07/31	/03 11:35	Received	: 07/31/0	3 14:10					
No TICs found	ND		300	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS

Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
37D-SB01-6 (P308025-01) Soil	Sampled: 07/30	/03 09:52	Received:	07/31/03	14:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080086	08/13/03	08/15/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	**		"	"	"		
Anthracene	ND	14	330	m.		*	"			
Azobenzene	ND	20	330		"	"	*		•	
Benzidine	ND	1700	1700	*	**		,,			
Benzoic acid	ND	2.7	1700	"	***				**	
Benzo (a) anthracene	ND	7.6	330		"				"	
Benzo (b+k) fluoranthene (total)	ND	13	330		**		"		*	
Benzo (g,h,i) perylene	ND	8.8	330	"	***	*	**	"	"	
Benzo (a) pyrene	ND	10	330		"				"	
Benzyl alcohol	ND	11	660		"		"	*	**	
Bis(2-chloroethoxy)methane	ND	9.1	330	**	n	n	**	*		
Bis(2-chloroethyl)ether	ND	15	330	**	"	"		*	**	
Bis(2-chloroisopropyl)ether	ND	16	330	*		**	"		u	
Bis(2-ethylhexyl)phthalate	47	9.3	330	*		"	**		**	1
4-Bromophenyl phenyl ether	ND	13	330	"		н	"		"	
Butyl benzyl phthalate	ND	11	330	**		н		"		
4-Chloroaniline	ND	58	660	н	u .		n	u	**	
4-Chloro-3-methylphenol	ND	11	660	**			*			
2-Chloronaphthalene	ND	9.9	330		w		300	, w	"	
2-Chlorophenol	ND	16	330	н		**	m .		**	
4-Chlorophenyl phenyl ether	ND	13	330	н			· m		n	
Chrysene	ND	11	330				u		n	
Dibenz (a,h) anthracene	ND	18	330	n	п	n			**	
Dibenzofuran	ND	9.6	330		н		:m::	.11		
Di-n-butyl phthalate	ND	12	330		н			30	344	
1,2-Dichlorobenzene	ND	16	330	, w	н		(10)			
1,3-Dichlorobenzene	ND	14	330	30	(#)	п	(0.0)		.**	
1,4-Dichlorobenzene	ND	15	330		· H	· u	(11)		,,	
3,3'-Dichlorobenzidine	ND	44	660							
2,4-Dichlorophenol	ND	15	330			110	т		**	
Diethyl phthalate	66	14	330			н		,		
2,4-Dimethylphenol	ND	36	330	**						
Dimethyl phthalate	ND	11	330	,,		W				
4,6-Dinitro-2-methylphenol	ND	17	1700			w			**	
2,4-Dinitrophenol	ND	10	1700			**	w	**		
2,4-Dinitrotoluene	ND	20	330							

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS

Project Number: N/A
Project Manager: Bruce Lewis

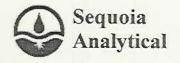
P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
37D-SB01-6 (P308025-01) Soil	Sampled: 07/30	/03 09:52	Received:	07/31/03	14:10					
2,6-Dinitrotoluene	ND	13	330	ug/kg	1	3080086	08/13/03	08/15/03	EPA 8270C	
Di-n-octyl phthalate	ND	11	330			"	"	"	•	
Fluoranthene	ND	11	330	**			*		"	
Fluorene	ND	7.9	330	**	"	"	*		**	
Hexachlorobenzene	ND	15	330	"			"			
Hexachlorobutadiene	ND	17	330			*	"		"	
Hexachlorocyclopentadiene	ND	10	330	11		W	**		"	
Hexachloroethane	ND	17	330			,,	"	· ·	*	
Indeno (1,2,3-cd) pyrene	ND	11	330		n	n			**	
Isophorone	ND	14	330	,,	,,		"	**	**	
2-Methylnaphthalene	ND	10	330						**	
2-Methylphenol	ND	16	330		**			**	**	
4-Methylphenol	ND	11	330		**		11		н	
Naphthalene	ND	13	330		**		"		**	
2-Nitroaniline	ND	17	1700		н		in .	11		
3-Nitroaniline	ND	18	1700	ti .	**				**	
4-Nitroaniline	ND	22	1700	**	m .			n		
Nitrobenzene	ND	16	330		*		***		**	
2-Nitrophenol	ND	14	330		n)H :	***	**	н	
4-Nitrophenol	ND	23	1700		н.	n.	30	ж	**	
N-Nitrosodimethylamine	ND	16	330		.0	(0)		30.5	*	
N-Nitrosodiphenylamine	ND	17	330							
N-Nitrosodi-n-propylamine	ND	15	330		.00.		w		æ	
Pentachlorophenol	ND	12	1700							
Phenanthrene	ND	14	330	2002			.11	М.	**	
Phenol	ND	12	330				"	,,		
Pyrene	ND	12	330	*	u					
1,2,4-Trichlorobenzene	ND	15	330			*				
2,4,5-Trichlorophenol	ND	14	330	*						
2,4,6-Trichlorophenol	ND	9.4	330	W.		н				
Surrogate: 2-Fluorophenol		67%	11-1.	20		,,	"	."	**	
Surrogate: Phenol-d6		76 %	16-1	30		"	"	"		
Surrogate: Nitrobenzene-d5		82 %	16-1.	26		"	"	#	"	
Surrogate: 2-Fluorobiphenyl		86 %	28-1	34		"	"	,,,	"	
Surrogate: 2,4,6-Tribromophenoi	!	90 %	51-1			"	"	"	"	
Surrogate: Terphenyl-d14		102 %	64-1			**	"	"	"	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB01-2.5 (P308025-02) Soil	Sampled: 07/	30/03 12:20	Received	l: 07/31/0	3 14:10				F	R-05, R-06
Acenaphthene	ND	26	990	ug/kg	2	3080086	08/13/03	08/15/03	EPA 8270C	
Acenaphthylene	ND	23	990			(0)	w		31	
Anthracene	ND	42	990		. 11			(11)		
Azobenzene	ND	61	990				n	(10)	"	
Benzidine	ND	5100	5100	:10)					и	
Benzoic acid	ND	8.0	5100	11		u ·		ж.	**	
Benzo (a) anthracene	ND	23	990	н		"	"		**	
Benzo (b+k) fluoranthene (total)	ND	40	990	11					***	
Benzo (g,h,i) perylene	ND	27	990			"	Tr.		**	
Benzo (a) pyrene	ND	30	990				-80 (**	
Benzyl alcohol	ND	34	2000	"						
Bis(2-chloroethoxy)methane	ND	27	990	*						
Bis(2-chloroethyl)ether	ND	46	990	"		**	*	н		
Bis(2-chloroisopropyl)ether	ND	47	990	**	,,	**				
Bis(2-ethylhexyl)phthalate	180	28	990	"						1
4-Bromophenyl phenyl ether	ND	38	990					*		
Butyl benzyl phthalate	ND	34	990	**		**				
4-Chloroaniline	ND	180	2000	111					**	
4-Chloro-3-methylphenol	ND	32	2000		,,			**	*	
2-Chloronaphthalene	ND	30	990		н			**	*	
2-Chlorophenol	ND	47	990	"	11				n	
4-Chlorophenyl phenyl ether	ND	38	990		- 11	n .	"	"	**	
Chrysene	150	32	990				**		"	J
Dibenz (a,h) anthracene	ND	55	990		**	m.	n		**	
Dibenzofuran	ND	29	990		***	**	**		u u	
Di-n-butyl phthalate	260	35	990	.00	.0	363	3#		**	J
1,2-Dichlorobenzene	ND	48	990					10.0	**	
1,3-Dichlorobenzene	ND	41	990			н	.11		**	
1,4-Dichlorobenzene	ND	46	990	"	.00	311	30	н	***	
3,3'-Dichlorobenzidine	ND	130	2000	**	30	н	**			
2,4-Dichlorophenol	ND	44	990		39		**	**	,,	
Diethyl phthalate	ND	43	990				.01	70	M.	
2,4-Dimethylphenol	ND	110	990		39	**		311	115	
Dimethyl phthalate	ND	34	990	**		.00		.11	"	
4,6-Dinitro-2-methylphenol	ND	52	5100		"		"	**	"	
2,4-Dinitrophenol	ND	31	5100				,,	"	π,	
2,4-Dinitrotoluene	ND	59	990				,,			

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS

Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	
36D-SB01-2.5 (P308025-02) Soil	Sampled: 07/3	30/03 12:20	Received	: 07/31/0	3 14:10				R-05, R-06		
2,6-Dinitrotoluene	ND	40	990	ug/kg	2	3080086	08/13/03	08/15/03	EPA 8270C		
Di-n-octyl phthalate	ND	34	990		#	.0			**		
Fluoranthene	160	34	990	100		*	н	30 /	**		
Fluorene	ND	24	990		**			(10)			
Hexachlorobenzene	ND	46	990	7.7					**		
Hexachlorobutadiene	ND	51	990		**		30	.00	п		
Hexachlorocyclopentadiene	ND	30	990		."	.0	.00		"		
Hexachloroethane	ND	52	990		**		11	m .	W.		
Indeno (1,2,3-cd) pyrene	ND	34	990			.0.	77				
Isophorone	ND	43	990		"		"				
2-Methylnaphthalene	ND	31	990								
2-Methylphenol	ND	47	990				"		*		
4-Methylphenol	ND	34	990	•			,,				
Naphthalene	ND	40	990						*		
2-Nitroaniline	ND	52	5100	m		n	"				
3-Nitroaniline	ND	54	5100				.,				
4-Nitroaniline	ND	67	5100								
Nitrobenzene	ND	49	990	п		**					
2-Nitrophenol	ND	43	990	"	*			•	**		
4-Nitrophenol	ND	70	5100	n			"				
N-Nitrosodimethylamine	ND	49	990	"			п		**		
N-Nitrosodiphenylamine	ND	50	990	"			**	*			
N-Nitrosodi-n-propylamine	ND	44	990	н		n	"				
Pentachlorophenol	ND	36	5100			n	**	**			
Phenanthrene	ND	41	990	*	"		"		*		
Phenol	ND	37	990	**		"	Ħ	**			
Pyrene	180	36	990	н	"	**	W				
1,2,4-Trichlorobenzene	ND	46	990	**			н		"		
2,4,5-Trichlorophenol	ND	41	990	**		n	**	n			
2,4,6-Trichlorophenol	ND	28	990		**	.0	n	900	11.		
Surrogate: 2-Fluorophenol		42 %	11-12	0		w	"	"	w.		
Surrogate: Phenol-d6		52 %	16-13			"	"	"			
Surrogate: Nitrobenzene-d5		57%	16-12	6		"	"	"			
Surrogate: 2-Fluorobiphenyl		67 %	28-13	4		"	"	"	"		
Surrogate: 2,4,6-Tribromophenol		67 %	51-14			"	"		"		
Surrogate: Terphenyl-d14		76 %	64-11	9		"	"	"	"		

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS Project Number: N/A P308025 Reported: 08/25/03 15:56

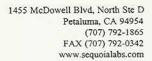
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB01-5 (P308025-03) Soil	Sampled: 07/30	/03 12:26	Received:	07/31/03						
Acenaphthene	ND	8.7	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	"	*		и	"	**	
Anthracene	ND	14	330	"	"			*		
Azobenzene	ND	20	330	"	*			**	"	
Benzidine	ND	1700	1700		*			**	*	
Benzoic acid	52	2.7	1700				H	**	**	J
Benzo (a) anthracene	ND	7.6	330					**		
Benzo (b+k) fluoranthene (total)	ND	13	330					**	**	
Benzo (g,h,i) perylene	ND	8.8	330		#			**	n	
Benzo (a) pyrene	ND	10	330		ш		**	11	н	
Benzyl alcohol	ND	11	660		n			700	**	
Bis(2-chloroethoxy)methane	ND	9.1	330		н			10.5	**	
Bis(2-chloroethyl)ether	ND	15	330		н	(#	.m.	. 11		
Bis(2-chloroisopropyl)ether	ND	16	330		н				w	
Bis(2-ethylhexyl)phthalate	ND	9.3	330		*		n			
4-Bromophenyl phenyl ether	ND	13	330	n.		"		и	ап	
Butyl benzyl phthalate	ND	11	330		w	0			эн	
4-Chloroaniline	ND	58	660					n		
4-Chloro-3-methylphenol	ND	11	660	(10)	w				ж	
2-Chloronaphthalene	ND	9.9	330				.0			
2-Chlorophenol	ND	16	330	w	311	, m			311	
4-Chlorophenyl phenyl ether	ND	13	330				.0		**	
Chrysene	ND	11	330	"	"			"	,,	
Dibenz (a,h) anthracene	ND	18	330						"	
Dibenzofuran	ND	9.6	330		**				,,	
Di-n-butyl phthalate	ND	12	330	**	*					
1,2-Dichlorobenzene	ND	16	330							
1,3-Dichlorobenzene	ND	14	330							
1,4-Dichlorobenzene	ND	15	330			u				
3,3'-Dichlorobenzidine	ND	44	660				tr			
2,4-Dichlorophenol	ND	15	330	*						
Diethyl phthalate	ND	14	330							
2,4-Dimethylphenol	ND	36	330						**	
Dimethyl phthalate	ND	11	330	,,	"		w			
4,6-Dinitro-2-methylphenol	ND	17	1700		"					
2,4-Dinitrophenol	ND	10	1700			,,				
2,4-Dinitrotoluene	ND	20	330			,,	n			

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS

Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB01-5 (P308025-03) Soil	Sampled: 07/30	/03 12:26	Received:	07/31/03	14:10					
2,6-Dinitrotoluene	ND	13	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
Di-n-octyl phthalate	ND	11	330	"			10	ш	910	
Fluoranthene	ND	11	330			n			**	
Fluorene	ND	7.9	330	an .	**	W.	7.0		н	
Hexachlorobenzene	ND	15	330			н		**		
Hexachlorobutadiene	ND	17	330					Σn		
Hexachlorocyclopentadiene	ND	10	330	(iii)	(11)	(91)	H	"		
Hexachloroethane	ND	17	330	**		н	H		80%	
Indeno (1,2,3-cd) pyrene	ND	11	330	"	**		u	**	(000)	
Isophorone	ND	14	330	u u	"	r.	н	H.	(m)	
2-Methylnaphthalene	ND	10	330	"	#5	16	w	#	ш	
2-Methylphenol	ND	16	330	"	W.	#	. 10	**		
4-Methylphenol	ND	11	330	n	110	н	*		TH.	
Naphthalene	ND	13	330	Hi.	11.			"	н	
2-Nitroaniline	ND	17	1700	iii	W.	u u	"	**	.W.	
3-Nitroaniline	ND	18	1700	0	11)	w.	**	"	9.007	
4-Nitroaniline	ND	22	1700	"		"	"	"	w	
Nitrobenzene	ND	16	330		"	39	11		**	
2-Nitrophenol	ND	14	330	н	m				u	
4-Nitrophenol	ND	23	1700	"					*	
N-Nitrosodimethylamine	ND	16	330	n	н					
N-Nitrosodiphenylamine	ND	17	330	"		"		*	# P	
N-Nitrosodi-n-propylamine	ND	15	330	31				,,		
Pentachlorophenol	ND	12	1700			,,	n		*	
Phenanthrene	ND	14	330	.07			,,		**	
Phenol	ND	12	330			ii .		in	*	
Pyrene	ND	12	330			311		. "	"	
1,2,4-Trichlorobenzene	ND	15	330			**	"	*		
2,4,5-Trichlorophenol	ND	14	330	**					**	
2,4,6-Trichlorophenol	ND	9.4	330						"	
Surrogate: 2-Fluorophenol		58 %	11-1	20		"	"	"	"	
		67 %	16-1				"	"	"	
Surrogate: Phenol-d6 Surrogate: Nitrobenzene-d5		69 %	16-1			,,	"	"	"	
		71 %	28-1			"	"	#	"	
Surrogate: 2-Fluorobiphenyl	1	71 % 83 %	20-1 51-1			**	"	"	"	
Surrogate: 2,4,6-Tribromopheno	H	103 %	64-1			"		"	"	
Surrogate: Terphenyl-d14		103 %	04-1	17						

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB01D-40 (P308025-12) Soil	Sampled: 07	/30/03 15:31	Receive	ed: 07/31/	03 14:10					
2-Nitroaniline	ND	17	1700	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
3-Nitroaniline	ND	18	1700		"	"	"	"		
4-Nitroaniline	ND	22	1700			"	"	,,		
Nitrobenzene	ND	16	330	"	**	"			п	
2-Nitrophenol	ND	14	330	"					. 11	
4-Nitrophenol	ND	23	1700	"	*	"	"			
N-Nitrosodimethylamine	ND	16	330		"					
N-Nitrosodiphenylamine	ND	17	330	"		"	"	"	7n	
N-Nitrosodi-n-propylamine	ND	15	330	"			"	"	*	
Pentachlorophenol	ND	12	1700			,,	,,		н	
Phenanthrene	ND	14	330							
Phenol	ND	12	330		**				*	
Pyrene	ND	12	330		ú	,			н	
1,2,4-Trichlorobenzene	ND	15	330	**		n	11	**	"	
2,4,5-Trichlorophenol	ND	14	330				**	,,		
2,4,6-Trichlorophenol	ND	9.4	330	"		*	**		u	
Surrogate: 2-Fluorophenol		64 %	11-12	20		"	"	"	"	
Surrogate: Phenol-d6		73 %	16-13	30		"	**	u	"	
Surrogate: Nitrobenzene-d5		76 %	16-12	26		3#	"	"	"	
Surrogate: 2-Fluorobiphenyl		73 %	28-13	34		"	n	w	"	
Surrogate: 2,4,6-Tribromophenol		82 %	51-14	14		"	**	"	"	
Surrogate: Terphenyl-d14		99 %	64-1	19		"	"	"	216	
36D-SB02-0 (P308025-13) Soil Sa	ampled: 07/31	/03 10:09 R	eceived:	07/31/03	14:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	"	"	n.	u	ж		
Anthracene	ND	14	330			"	"	"		
Azobenzene	ND	20	330		"	,,	"	#	(90)	
Benzidine	ND	1700	1700		"		"	11	(4)	
Benzoic acid	ND	2.7	1700		**		"	**	3.00	
Benzo (a) anthracene	ND	7.6	330						1.4	
Benzo (b+k) fluoranthene (total)	ND	13	330	"	"	"		"	*	
Benzo (g,h,i) perylene	ND	8.8	330		**			**		
Benzo (a) pyrene	ND	10	330		"	"		"		
Benzyl alcohol	ND	11	660		"	"			н	
Bis(2-chloroethoxy)methane	ND	9.1	330		"				*	

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
6D-SB02-0 (P308025-13) Soil	Sampled: 07/31	/03 10:09	Received:	07/31/03	14:10					
Bis(2-chloroethyl)ether	ND	15	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
Bis(2-chloroisopropyl)ether	ND	16	330		n	.0		"	**	
Bis(2-ethylhexyl)phthalate	ND	9.3	330			**	in .	311	H:	
4-Bromophenyl phenyl ether	ND	13	330			,n			n	
Butyl benzyl phthalate	ND	11	330	,,	21.	31	,0	30	10	
-Chloroaniline	ND	58	660	,,,		,,,			#	
-Chloro-3-methylphenol	ND	11	660	"		**	n		**	
2-Chloronaphthalene	ND	9.9	330	**	"	311	"		11	
2-Chlorophenol	ND	16	330	*		"	**			
-Chlorophenyl phenyl ether	ND	13	330				"	.00		
Chrysene	ND	11	330			,,	,,	,,		
Dibenz (a,h) anthracene	ND	18	330	**		**	*			
Dibenzofuran	ND	9.6	330			,,	"	,,		
Di-n-butyl phthalate	ND	12	330					**	u,	
,2-Dichlorobenzene	ND	16	330		,,			,,	**	
,3-Dichlorobenzene	ND	14	330		,,	.,		,,	"	
,4-Dichlorobenzene	ND	15	330	,,	*					
3,3'-Dichlorobenzidine	ND	44	660		"	,,			- #	
,4-Dichlorophenol	ND	15	330	,,		,			и.	
Diethyl phthalate	ND	14	330		**					
,4-Dimethylphenol	ND	36	330	,,	**	"			**	
Dimethyl phthalate	ND	11	330		"		n		•	
,6-Dinitro-2-methylphenol	ND	17	1700	"		*	,,		(a)	
,4-Dinitrophenol	ND	10	1700		u	н	,,	,,		
,4-Dinitrotoluene	ND	20	330			"	,,		(4)	
,6-Dinitrotoluene	ND	13	330				**	,,		
Di-n-octyl phthalate	ND	11	330		н					
luoranthene	ND	11	330				ii.	**	- N	
luorene	ND	7.9	330	ū	**				*	
Texachlorobenzene	ND	15	330	*					*	
Hexachlorobutadiene	ND	17	330	,,	"		16		**	
Hexachlorocyclopentadiene	ND	10	330	,,	10			**		
lexachloroethane	ND	17	330	**	n:	ж		**	п	
ndeno (1,2,3-cd) pyrene	ND	11	330	"	n			,,	и	
sophorone	ND	14	330	,,			**		n	
-Methylnaphthalene	ND	10	330			,,				

Sequoia Analytical - Petaluma





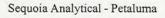


Project: Aerojet RI/FS Project Number: N/A P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB02-0 (P308025-13) Soil	Sampled: 07/31	/03 10:09	Received: 0	7/31/03	14:10					
2-Methylphenol	ND	16	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
4-Methylphenol	ND	11	330	"		"	"	"	н	
Naphthalene	ND	13	330	"	"					
2-Nitroaniline	ND	17	1700	"	"	"	"		н	
3-Nitroaniline	ND	18	1700		"	"	"	"		
4-Nitroaniline	ND	22	1700	"	"	"	,,	,,		
Nitrobenzene	ND	16	330	"	**		"		**	
2-Nitrophenol	ND	14	330				"			
4-Nitrophenol	ND	23	1700	"	"	"		"	11	
N-Nitrosodimethylamine	ND	16	330	"		"		,	11	
N-Nitrosodiphenylamine	ND	17	330							
N-Nitrosodi-n-propylamine	ND	15	330	n n	m .	,,	*		u	
Pentachlorophenol	ND	12	1700	*	**			,,		
Phenanthrene	ND	14	330	"	"		*			
Phenol	ND	12	330		"	"	**	,		
Pyrene	ND	12	330	"	w.	"	"	"		
1,2,4-Trichlorobenzene	ND	15	330		w	n n	*	*		
2,4,5-Trichlorophenol	ND	14	330	**	"	"	"	*		
2,4,6-Trichlorophenol	ND	9.4	330	n	#	**	**	#	OH:	
Surrogate: 2-Fluorophenol		55 %	11-120)			"	"	"	
Surrogate: Phenol-d6		66 %	16-130)		"	"	"	"	
Surrogate: Nitrobenzene-d5		70 %	16-120	5		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		68 %	28-134	1		"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		69 %	51-14	1		"	"	"	"	
Surrogate: Terphenyl-d14		97 %	64-119	9		"	"	.#)	"	









Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

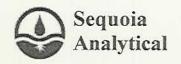
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
36D-SB02-3 (P308025-14) Soil	Sampled: 07/31	/03 10:23	Received:	07/31/03	14:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	"	"	"	"			
Anthracene	ND	14	330	"	"	"				
Azobenzene	ND	20	330	"	"	"			n.	
Benzidine	ND	1700	1700		"	7		"		
Benzoic acid	ND	2.7	1700		*	**			**	
Benzo (a) anthracene	ND	7.6	330	"		"		"	*	
Benzo (b+k) fluoranthene (total)	ND	13	330	"	"		•			
Benzo (g,h,i) perylene	ND	8.8	330	*		"				
Benzo (a) pyrene	ND	10	330	"		"	#V	,,		
Benzyl alcohol	ND	11	660		"	**				
Bis(2-chloroethoxy)methane	ND	9.1	330	"	"	*	"			
Bis(2-chloroethyl)ether	ND	15	330	*		*			•	
Bis(2-chloroisopropyl)ether	ND	16	330	"		*	•			
Bis(2-ethylhexyl)phthalate	ND	9.3	330			"				
4-Bromophenyl phenyl ether	ND	13	330	*			н			
Butyl benzyl phthalate	ND	11	330	**		w				
4-Chloroaniline	ND	58	660	**						
4-Chloro-3-methylphenol	ND	11	660	#	u.	**	*	Ü	· ·	
2-Chloronaphthalene	ND	9.9	330	**	e.					
2-Chlorophenol	ND	16	330	н	u.	"	*			
4-Chlorophenyl phenyl ether	ND	13	330	16		11	n.	ni .	300	
Chrysene	ND	11	330	*	n	ii.	H	"		
Dibenz (a,h) anthracene	ND	18	330	10	"	"	**	м	11	
Dibenzofuran	ND	9.6	330	w	n°	n	#E			
Di-n-butyl phthalate	ND	12	330			,				
1,2-Dichlorobenzene	ND	16	330			"				
1,3-Dichlorobenzene	ND	14	330	**	100	•	-11	**		
1,4-Dichlorobenzene	ND	15	330	**	n.	11		m.		
3,3'-Dichlorobenzidine	ND	44	660	m'	100	m:	n	m	n	
2,4-Dichlorophenol	ND	15	330	75.		9.	(19)	16	: 11	
Diethyl phthalate	ND	14	330			"			"	
2,4-Dimethylphenol	ND	36	330		n.	н.	"	,,		
Dimethyl phthalate	ND	11	330	**		-				
4,6-Dinitro-2-methylphenol	ND	17	1700	**		#	H	,,		
2,4-Dinitrophenol	ND	10	1700							

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB02-3 (P308025-14) Soil	Sampled: 07/31	1/03 10:23	Received:	07/31/03	14:10					
2,4-Dinitrotoluene	ND	20	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
2,6-Dinitrotoluene	ND	13	330	"						
Di-n-octyl phthalate	ND	11	330					"		
Fluoranthene	ND	11	330	"	"	"		n.		
Fluorene	ND	7.9	330		11	"				
Hexachlorobenzene	ND	15	330	"	**					
Hexachlorobutadiene	ND	17	330	w	п			"		
Hexachlorocyclopentadiene	ND	10	330		"	•		*		
Hexachloroethane	ND	17	330	•	п				*	
Indeno (1,2,3-cd) pyrene	ND	11	330		**					
Isophorone	ND	14	330	**	w					
2-Methylnaphthalene	ND	10	330	ű	11					
2-Methylphenol	ND	16	330		н	•				
4-Methylphenol	ND	11	330	n)	n.	n-			H.	
Naphthalene	ND	13	330		и					
2-Nitroaniline	ND	17	1700		п					
3-Nitroaniline	ND	18	1700		w	11	10		**	
4-Nitroaniline	ND	22	1700	11"					36	
Nitrobenzene	ND	16	330	60	н			n n		
2-Nitrophenol	ND	14	330	**	· nc					
4-Nitrophenol	ND	23	1700			"		11:		
N-Nitrosodimethylamine	ND	16	330		2.00	**		10	(H)	
N-Nitrosodiphenylamine	ND	17	330	w:	. 11	0.				
N-Nitrosodi-n-propylamine	ND	15	330	"		"				
Pentachlorophenol	ND	12	1700			n:			11	
Phenanthrene	ND	14	330	1296		W.		110	.0	
Phenol	ND	12	330	. 11		17			300	
Pyrene	ND	12	330			н.			100	
1,2,4-Trichlorobenzene	ND	15	330			m.	2.00		· m	
2,4,5-Trichlorophenol	ND	14	330	10	(00)	"	. 100	10	7.00	
2,4,6-Trichlorophenol	ND	9.4	330				, 11	**	(10)	
Surrogate: 2-Fluorophenol		61 %	11-1.	20		"	и	"	"	
Surrogate: Phenol-d6		71 %	16-1.	30		"	"	"	,	
Surrogate: Nitrobenzene-d5		74 %	16-1.	26		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		80 %	28-1.	34		,,	"	"	•	
Surrogate: 2,4,6-Tribromophenol		90 %	51-1-	14		"	"	,,	"	

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS

Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB02-3 (P308025-14) Soil	Sampled: 07/31	/03 10:23	Received:	07/31/03	14:10					
Surrogate: Terphenyl-d14		95 %	64-1	19		3080086	08/13/03	08/20/03	EPA 8270C	
36D-SB02-6 (P308025-15) Soil	Sampled: 07/31	/03 10:35	Received:	07/31/03	14:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	"	0	**		"		
Anthracene	ND	14	330	н		"	"	"		
Azobenzene	ND	20	330	"	"	"	н	"		
Benzidine	ND	1700	1700	**	**	"	"			
Benzoic acid	ND	2.7	1700	"		**	**	"		
Benzo (a) anthracene	ND	7.6	330	iii	**	"		"		
Benzo (b+k) fluoranthene (total)	ND	13	330	11	11	"		ii .		
Benzo (g,h,i) perylene	ND	8.8	330	"	#	**	ň			
Benzo (a) pyrene	ND	10	330	n.	100	**		**	**	
Benzyl alcohol	ND	11	660	**		H.				
Bis(2-chloroethoxy)methane	ND	9.1	330	n		Pt	iić	10	**	
Bis(2-chloroethyl)ether	ND	15	330	17.	W.	W			n	
Bis(2-chloroisopropyl)ether	ND	16	330	11	Ú.	*		**		
Bis(2-ethylhexyl)phthalate	35	9.3	330	**	10	11	· w	**		J
4-Bromophenyl phenyl ether	ND	13	330			W.	1.00	11.		
Butyl benzyl phthalate	ND	11	330		. 11			**	**	
4-Chloroaniline	ND	58	660		"			п	**	
4-Chloro-3-methylphenol	ND	11	660					**		
2-Chloronaphthalene	ND	9.9	330							
2-Chlorophenol	ND	16	330					,,		
4-Chlorophenyl phenyl ether	ND	13	330				н	m)		
Chrysene	ND	11	330							
Dibenz (a,h) anthracene	ND	18	330					11	"	
Dibenzofuran	ND	9.6	330		*					
Di-n-butyl phthalate	ND	12	330		*				**	
1,2-Dichlorobenzene	ND	16	330							
1,3-Dichlorobenzene	ND	14	330							
1,4-Dichlorobenzene	ND	15	330							
3,3'-Dichlorobenzidine	ND	44	660							
2,4-Dichlorophenol	ND	15	330			,,	**			
Diethyl phthalate	ND	14	330							
2,4-Dimethylphenol	ND	36	330						,,	
Dimethyl phthalate	ND	11	330							

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS
Project Number: N/A

Project Manager: Bruce Lewis

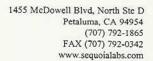
P308025 Reported: 08/25/03 15:56

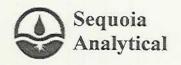
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
36D-SB02-6 (P308025-15) Soil	Sampled: 07/31	/03 10:35	Received:	07/31/03	14:10					
4,6-Dinitro-2-methylphenol	ND	17	1700	ug/kg	1	3080086	08/13/03	08/20/03	EPA 8270C	
2,4-Dinitrophenol	ND	10	1700	"		"	#	"	"	
2,4-Dinitrotoluene	ND	20	330		,,	n	**		n	
2,6-Dinitrotoluene	ND	13	330	**	.,	77		,,		
Di-n-octyl phthalate	ND	11	330	"	n	**	u	*	и;	
Fluoranthene	ND	11	330			**		211	100	
Fluorene	ND	7.9	330		"				н.	
Hexachlorobenzene	ND	15	330	"	**				н	
Hexachlorobutadiene	ND	17	330		"		"		. 11	
Hexachlorocyclopentadiene	ND	10	330	"					· m	
Hexachloroethane	ND	17	330	**			**	,		
Indeno (1,2,3-cd) pyrene	ND	11	330	**	"	"	**		2,00	
Isophorone	ND	14	330				*	"), n ;	
2-Methylnaphthalene	ND	10	330		*			**		
2-Methylphenol	ND	16	330		*	,,				
4-Methylphenol	ND	11	330							
Naphthalene	ND	13	330	11		"		,,		
2-Nitroaniline	ND	17	1700	**		**	**		"	
3-Nitroaniline	ND	18	1700	11	n.			**		
4-Nitroaniline	ND	22	1700	"		"			**	
Nitrobenzene	ND	16	330		**			11		
2-Nitrophenol	ND	14	330		**					
1-Nitrophenol	ND	23	1700	115		w				
N-Nitrosodimethylamine	ND	16	330	500		н.	**	,,		
N-Nitrosodiphenylamine	ND	17	330				**	,,	,,	
N-Nitrosodi-n-propylamine	ND	15	330	· W	n	- 11				
Pentachlorophenol	ND	12	1700		**			- 11		
Phenanthrene	ND	14	330	· n		- 11			н	
Phenol	ND	12	330	"	н	n	100		**	
Pyrene	ND	12	330	· m		н	**			
,2,4-Trichlorobenzene	ND	15	330	W		н		**		
2,4,5-Trichlorophenol	ND	14	330		**		an .	n		
2,4,6-Trichlorophenol	ND	9.4	330	.01	*	n.		н	n .	
Surrogate: 2-Fluorophenol		58 %	11-12	0		"	"	"	"	
Surrogate: Phenol-d6		67%	16-13	0		"	"	"	w.	
Surrogate: Nitrobenzene-d5		67%	16-12	6		"	,,	"	n .	

Sequoia Analytical - Petaluma







Project: Aerojet RI/FS
Project Number: N/A

Project Number: N/A
Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB02-6 (P308025-15) Soil S	Sampled: 07/31	/03 10:35 R	eceived:	07/31/03	14:10					
Surrogate: 2-Fluorobiphenyl		70 %	28-13	34		3080086	08/13/03	08/20/03	EPA 8270C	
Surrogate: 2,4,6-Tribromophenol		81 %	51-14	14		"	u	"	"	
Surrogate: Terphenyl-d14		94 %	64-11	19		"	#	*	"	
36D-SB02-15E (P308025-16) Water	er Sampled:	07/31/03 11:0	4 Recei	ved: 07/3	1/03 14:10)				
Acenaphthene	ND	1.2	10	ug/l	1	3080056	08/05/03	08/13/03	EPA 8270C	
Acenaphthylene	ND	1.4	10	"	"	.11	**			
Anthracene	ND	0.62	10		,,	311	**	39	n:	
Azobenzene	ND	0.65	21		.11	311	u	**	oř.	
Benzidine	ND	3.3	52	22	,,			э	(H)	
Benzoic acid	ND	4.0	52		,,		"		н	
Benzo (a) anthracene	ND	0.45	10	2.		**		31	:: н::	
Benzo (b+k) fluoranthene (total)	ND	1.2	10	"					· n	
Benzo (g,h,i) perylene	ND	0.66	10	,,			v.	w	300	
Benzo (a) pyrene	ND	0.90	10	"		n	"		n	
Benzyl alcohol	ND	4.0	21	"		*	"	"		
Bis(2-chloroethoxy)methane	ND	1.1	10	"		"	"			
Bis(2-chloroethyl)ether	ND	1.5	10	"			"			
Bis(2-chloroisopropyl)ether	ND	1.6	10	,,	"		"		5. 4 5	
Bis(2-ethylhexyl)phthalate	ND	2.9	10		W				*	
4-Bromophenyl phenyl ether	ND	0.72	10		"			"		
Butyl benzyl phthalate	ND	2.8	10		**	"				
4-Chloroaniline	ND	0.57	21	"	"	**	,,			
4-Chloro-3-methylphenol	ND	2.4	21	**				"		
2-Chloronaphthalene	ND	1.5	10	"		"	н			
2-Chlorophenol	ND	0.32	10	**		**	**	*		
4-Chlorophenyl phenyl ether	ND	1.0	10		"					
Chrysene	ND	0.46	10							
Dibenz (a,h) anthracene	ND	0.57	10		**					
Dibenzofuran	ND	1.1	10			u.			**	
Di-n-butyl phthalate	ND	1.1	10	**	**	**	u		11	
1,2-Dichlorobenzene	ND	1.9	10	ni.		u.				
1,3-Dichlorobenzene	ND	1.8	10	н		*	*			
1,4-Dichlorobenzene	ND	1.8	10	**		"			**	
3,3'-Dichlorobenzidine	ND	2.9	21	- 100		н	н			
2,4-Dichlorophenol	ND	0.48	10		. 11	(10)	н			
Diethyl phthalate	ND	0.43	10	(0)	n.	or.				

Sequoia Analytical - Petaluma



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 1, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308047

Sample Identification

32D-SB07-5

32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P308047

No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308047

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P308047 Reported: 09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-5 (P308047-02) Soil	Sampled: 08/01	/03 09:50	Received:	08/01/03	14:07	= -9				
Acenaphthene	ND	8.7	330	ug/kg	1	3080253	08/14/03	08/21/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	"		"				
Anthracene	ND	14	330	н				*	,,	
Azobenzene	ND	20	330	/#	**	*				
Benzidine	ND	1700	1700			п				
Benzoic acid	ND	2.7	1700	u	л	.11	11		н	
Benzo (a) anthracene	ND	7.6	330	w	**		(8)		н	
Benzo (b+k) fluoranthene (total)	ND	13	330			"	н	**	n	
Benzo (g,h,i) perylene	ND	8.8	330						**	
Benzo (a) pyrene	ND	10	330		-11	n ·				
Benzyl alcohol	ND	11	660		n.				w	
Bis(2-chloroethoxy)methane	ND	9.1	330			200	,,			
Bis(2-chloroethyl)ether	ND	15	330	**				11		
Bis(2-chloroisopropyl)ether	ND	16	330			*				
Bis(2-ethylhexyl)phthalate	ND	9.3	330		**	**	**			
4-Bromophenyl phenyl ether	ND	13	330							
Butyl benzyl phthalate	ND	11	330		800				n	
4-Chloroaniline	ND	58	660			n.			***	
4-Chloro-3-methylphenol	ND	11	660						.0	
2-Chloronaphthalene	ND	9.9	330							
2-Chlorophenol	ND	16	330							
4-Chlorophenyl phenyl ether	ND	13	330	.0			"			
Chrysene	ND	11	330			"	и			
Dibenz (a,h) anthracene	ND	18	330				,	11		
Dibenzofuran	ND	9.6	330		,,	"			,,	
Di-n-butyl phthalate	ND	12	330							
1,2-Dichlorobenzene	ND	16	330							
1,3-Dichlorobenzene	ND	14	330							
1,4-Dichlorobenzene	ND	15	330						,,	
3,3'-Dichlorobenzidine	ND	44	660				,		"	
2,4-Dichlorophenol	ND	15								
Diethyl phthalate	ND	14	330 330							
2,4-Dimethylphenol	ND ND			и.						
Dimethyl phthalate	ND ND	36	330	и.			,			
4,6-Dinitro-2-methylphenol		11	330			,,				
	ND	17	1700		**		.11	110	*	
2,4-Dinitrophenol	ND	10	1700			"			*	
2,4-Dinitrotoluene	ND	20	330		**	3"	*			
2,6-Dinitrotoluene	ND	13	330	"			*		"	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308047 Reported: 09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-5 (P308047-02) Soil	Sampled: 08/0	1/03 09:50	Received:	08/01/03	14:07					
Di-n-octyl phthalate	ND	- 11	330	ug/kg	1	3080253	08/14/03	08/21/03	EPA 8270C	
Fluoranthene	ND	11	330	"				"	"	
Fluorene	ND	7.9	330			n				
Hexachlorobenzene	ND	15	330	w	n			*	,	
Hexachlorobutadiene	ND	17	330			**		w		
Hexachlorocyclopentadiene	ND	10	330	**		*	,,	*		
Hexachloroethane	ND	17	330				.01		29	
Indeno (1,2,3-cd) pyrene	ND	11	330	.0						
Isophorone	ND	14	330	an i						
2-Methylnaphthalene	ND	10	330	10		"				
2-Methylphenol	ND	16	330	н				н	**	
4-Methylphenol	ND	11	330				"		н	
Naphthalene	ND	13	330			,				
2-Nitroaniline	ND	17	1700	in .		,,	,,	n		
3-Nitroaniline	ND	18	1700	2003		'n				
4-Nitroaniline	ND	22	1700			**			ii.	
Nitrobenzene	ND	16	330					"		
2-Nitrophenol	ND	14	330	"		"	11		**	
4-Nitrophenol	ND	23	1700		**				"	
N-Nitrosodimethylamine	ND	16	330			"	,,			
N-Nitrosodiphenylamine	ND	17	330		"		w			
N-Nitrosodi-n-propylamine	ND	15	330	"	ž.	*				
Pentachlorophenol	ND	12	1700			"				
Phenanthrene	ND	14	330		"	"			i m	
Phenol	ND	12	330							
Pyrene	ND	12	330		**	н	и			
,2,4-Trichlorobenzene	ND	15	330	п	**		71			
2,4,5-Trichlorophenol	ND	14	330			,				
2,4,6-Trichlorophenol	ND	9.4	330							
Surrogate: 2-Fluorophenol		58 %	11-12	0		"	"	,,		
Surrogate: Phenol-d6		67%	16-13			,,	,,	**	"	
Surrogate: Nitrobenzene-d5		71%	16-12	7.		<i>**</i>	"	"		
Surrogate: 2-Fluorobiphenyl		76 %	28-13	7.0		"	"	,,		
Surrogate: 2,4,6-Tribromophenol		83 %	51-14			,,	"	,,	,,	
Surrogate: Terphenyl-d14		101%	64-11			,,	"	<u>"</u> =	,,	

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS Project Number: N/A P308047 Reported: 09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-10 (P308047-03) Soil	Sampled: 08/0	1/03 10:05	Received	08/01/03	14:07					
Acenaphthene	ND	8.7	330	ug/kg	1	3080253	08/14/03	08/21/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	**				*		
Anthracene	ND	14	330			**		"	**	
Azobenzene	ND	20	330		*		**		*	
Benzidine	ND	1700	1700			**		*		
Benzoic acid	ND	2.7	1700					**	Gee /	
Benzo (a) anthracene	ND	7.6	330			н	**	**	**	
Benzo (b+k) fluoranthene (total)	ND	13	330	0.00		. 98	.00			
Benzo (g,h,i) perylene	ND	8.8	330					"	**	
Benzo (a) pyrene	ND	10	330					"		
Benzyl alcohol	ND	11	660					*	**	
Bis(2-chloroethoxy)methane	ND	9.1	330				**	**	/H/3	
Bis(2-chloroethyl)ether	ND	15	330					**		
Bis(2-chloroisopropyl)ether	ND	16	330	**				**		
Bis(2-ethylhexyl)phthalate	54	9.3	330	H				*	*	
4-Bromophenyl phenyl ether	ND	13	330	"				*		
Butyl benzyl phthalate	ND	11	330	**		**				
4-Chloroaniline	ND	58	660	**					. 10	
4-Chloro-3-methylphenol	ND	11	660	**	100		**	"		
2-Chloronaphthalene	ND	9.9	330							
2-Chlorophenol	ND	16	330	,,						
4-Chlorophenyl phenyl ether	ND	13	330							
Chrysene	ND	11	330				w	**		
Dibenz (a,h) anthracene	ND	18	330	**	166	l m	W.	**		
Dibenzofuran	ND	9.6	330	H.	п	10:	W.		300	
Di-n-butyl phthalate	ND	12	330	**				"		
1,2-Dichlorobenzene	ND	16	330	"		"	"			
1,3-Dichlorobenzene	ND	14	330	.,		"				
1,4-Dichlorobenzene	ND	15	330				н			
3,3'-Dichlorobenzidine	ND	44	660			**	**	**	**	
2,4-Dichlorophenol	ND	15	330	**		ш				
Diethyl phthalate	ND	14	330						**	
2,4-Dimethylphenol	ND	36	330		"	"	**			
Dimethyl phthalate	ND	11	330			**	**		**	
4,6-Dinitro-2-methylphenol	ND	17	1700	**	**	H.	27			
2,4-Dinitrophenol	ND	10	1700	w	**					
2.4-Dinitrotoluene	ND	20	330		**	16	**	**		
2,6-Dinitrotoluene	ND	13	330							

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308047 Reported: 09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
32D-SB07-10 (P308047-03) Soil	Sampled: 08/0	1/03 10:05	Received	: 08/01/03	14:07					
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3080253	08/14/03	08/21/03	EPA 8270C	
Fluoranthene	ND	11	330	"	**					
Fluorene	ND	7.9	330	"		**	"		(0)	
Hexachlorobenzene	ND	15	330	**				"		
Hexachlorobutadiene	ND	17	330	"	**	**				
Hexachlorocyclopentadiene	ND	10	330	"	"	"	"			
Hexachloroethane	ND	17	330			"	**	**		
Indeno (1,2,3-cd) pyrene	ND	11	330	**				*		
Isophorone	ND	14	330	**	195	**		**	E.#C	
2-Methylnaphthalene	ND	10	330				"			
2-Methylphenol	ND	16	330			**				
4-Methylphenol	ND	11	330		"	"		**		
Naphthalene	ND	13	330		"		**	**		
2-Nitroaniline	ND	17	1700	*	*				*	
3-Nitroaniline	ND	18	1700	**			**	"		
4-Nitroaniline	ND	22	1700	"		"	"			
Nitrobenzene	ND	16	330			"		"		
2-Nitrophenol	ND	14	330	*	*			**	49	
4-Nitrophenol	ND	23	1700	"	#	**	*	"		
N-Nitrosodimethylamine	ND	16	330		*	"	**	*		
N-Nitrosodiphenylamine	ND	17	330	28	*	**		"		
N-Nitrosodi-n-propylamine	ND	15	330	•		"			·	
Pentachlorophenol	ND	12	1700					"		
Phenanthrene	ND	14	330		*	*	*	**		
Phenol	ND	12	330	**	*	**	**	**		
Pyrene	ND	12	330		*				н	
1,2,4-Trichlorobenzene	ND	15	330	*						
2,4,5-Trichlorophenol	ND	14	330	-				**		
2,4,6-Trichlorophenol	ND	9.4	330	"	"	"	"	"		
Surrogate: 2-Fluorophenol		59 %	11-1	20		"	"	"	H.	
Surrogate: Phenol-d6		68 %	16-1.	30		"	**	"	"	
Surrogate: Nitrobenzene-d5		72 %	16-1.	26		"	"	"	"	
Surrogate: 2-Fluorobiphenyl		77%	28-1.	34			#	"	"	
Surrogate: 2,4,6-Tribromophenol		83 %	51-1-	44		.e.	"	"		
Surrogate: Terphenyl-d14		108 %	64-1	19		"	"	"	"	

Sequoia Analytical - Petaluma

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 4, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5

32D-SB06-15

P308071 BNA 3SW 1

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
8/22/2003	Benzidine	-26.1	32D-SB07-2.5 32D-SB06-15	J detects UJ nondetects	A

3

P308071 BNA 3SW

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The sample used for the matrix spike was not related to this site. Therefore, the results did affect the sample results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

4

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as a field blanks. Therefore this parameter was not evaluated.

P308071 BNA 3SW

5

Aerojet RI/FS

Semivolatiles - Data Qualification Summary - SDG P308071

SDG	Sample	Compound	Flag	A or P	Reason
P308071	32D-SB07-2.5 32D-SB06-15	Benzidine	J detects UJ nondetects	A	CCV %D > <u>+</u> 25

Aerojet RI/FS

Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308071

No Sample Data Qualified in this SDG

P308071 BNA 3SW 6





Project: Aerojet RI/FS Project Number: N/A P308071 Reported: 09/09/03 16:50

Project Manager: Bruce Lewis

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-2.5 (P308071-01) Soil	Sampled: 08/0	4/03 09:05	Received	: 08/04/0	3 14:17					Draua
Acenaphthene	ND	8.7	330	ug/kg	-1	3080253	08/14/03	08/22/03	EPA 8270C	
Acenaphthylene	ND	7.6	330					**		
Anthracene	ND	14	330	**	- 1	"	#:		**	
Azobenzene	ND	20	330	*	- 31		#	**	*	E AT
Benzidine	ND	1700	1700			- 38	H2		*	W
Benzoic acid	ND	2.7	1700	11-		- 19			**	
Benzo (a) anthracene	ND	7.6	330	*6	190			29	**	
Benzo (b+k) fluoranthene (total)	ND	13	330				*	"	"	
Benzo (g,h,i) perylene	ND	8.8	330			-	*	*		
Benzo (a) pyrene	ND	10	330						**	
Benzyl alcohol	ND	11	660			*		**	**	
Bis(2-chloroethoxy)methane	ND	9.1	330	in		- 44	**	- 16	*	
Bis(2-chloroethyl)ether	ND	15	330			74				
Bis(2-chloroisopropyl)ether	ND	16	330	*	. #	10		36	*	
Bis(2-ethylhexyl)phthalate	170	9.3	330	**	0.1	- 91	*		7.	J
4-Bromophenyl phenyl ether	ND	13	330	H-	90		*		*	
Butyl benzyl phthalate	ND	11	330		100					
4-Chloroaniline	ND	58	660		0.50					
4-Chloro-3-methylphenol	ND	11	660		19	*			*	
2-Chloronaphthalene	ND	9.9	330				**		11	
2-Chlorophenol	ND	16	330	**			**		п.	
4-Chlorophenyl phenyl ether	ND	13	330	*			W		**	
Chrysene	ND	11	330		5.40	1,447	W			
Dibenz (a,h) anthracene	ND	18	330			. 11				
Dibenzofuran	ND	9.6	330		5.00	390		.00		
Di-n-butyl phthalate	ND	12	330		.00		*	125		
1,2-Dichlorobenzene	ND	16	330	29				,,,	*	
1,3-Dichlorobenzene	ND	14	330		1000		*	*		
1,4-Dichlorobenzene	ND	15	330					- 4	**	
3,3'-Dichlorobenzidine	ND	44	660		0					
2,4-Dichlorophenol	ND	15	330	-	#	201		(#)	*	
Diethyl phthalate	ND	14	330						*	
2,4-Dimethylphenol	ND	36	330		6.7			967	***	
Dimethyl phthalate	ND	11	330	н	*		39	120	28	
4,6-Dinitro-2-methylphenol	ND	17	1700		10					
2,4-Dinitro-2-methylphenol	ND	10	1700		80			7.		
2,4-Dinitrotoluene	ND	20	330						- 3	
2,6-Dinitrotoluene	ND	13	330		,	"	- 10			

Sequoia Analytical - Petaluma





Project: Aerojet RI/FS Project Number: N/A P308071 Reported: 09/09/03 16:50

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-2.5 (P308071-01) Soil	Sampled: 08/0	4/03 09:05	Received	: 08/04/0	3 14:17					
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3080253	08/14/03	08/22/03	EPA 8270C	
Fluoranthene	ND	11	330	"			1	"		
Fluorene	ND	7.9	330	"		*				
Hexachlorobenzene	ND	15	330	"		*	*		"	
Hexachlorobutadiene	ND	17	330				46.	- H		
Hexachlorocyclopentadiene	ND	10	330	**			*	9	".	
Hexachloroethane	ND	17	330				*)ii		
Indeno (1,2,3-cd) pyrene	ND	11	330	160		-10	#5			
Isophorone	ND	14	330		(4)	1.00	2.		**	
2-Methylnaphthalene	ND	10	330	*:		*		- 1		
2-Methylphenol	ND	16	330	2.						
4-Methylphenol	ND	11	330		**	*	- "			
Naphthalene	ND	13	330	*					40	
2-Nitroaniline	ND	17	1700			- 11	*			
3-Nitroaniline	ND	18	1700		. 10		11			
4-Nitroaniline	ND .	22	1700		**		16		*	
Nitrobenzene	ND	16	330	*		**		*	*	
2-Nitrophenol	ND	14	330	*			-5			
4-Nitrophenol	ND	23	1700	**	189	196	5		"	
N-Nitrosodimethylamine	ND	16	330							
N-Nitrosodiphenylamine	ND	17	330	**				- "		
N-Nitrosodi-n-propylamine	ND	15	330			*			**	
Pentachlorophenol	ND	12	1700			44.1			т.	
Phenanthrene	ND	14	330	*		# 1	и.		**	
Phenol	ND	12	330		- 47		**		10.	
Pyrene	ND	12	330				#)			
1,2,4-Trichlorobenzene	ND	15	330			***	.10	7		
2,4,5-Trichlorophenol	ND	14	330	18.			-			
2,4,6-Trichlorophenol	ND	9.4	330	794	1.00					
Surrogate: 2-Fluorophenol		43 %	11-1	20			M	5,005		
Surrogate: Phenol-d6		56 %	16-1	30		(4)		100	10	
Surrogate: Nitrobenzene-d5		53 %	16-1	26		*:	:#		"	
Surrogate: 2-Fluorobiphenyl		65 %	28-1	34		60	10	100	.,	
Surrogate: 2,4,6-Tribromophenol		86 %	51-1	44		16	- 0			
Surrogate: Terphenyl-d14		96 %	64-1	19		(6)	**		-	





Project: Aerojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P308071 Reported: 09/09/03 16:50

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

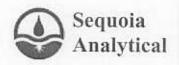
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB06-15 (P308071-06) Soil	Sampled: 08/0	4/03 12:45	Received	08/04/03	14:17			A 1000 C 100	AMERICAN .	שט פער
Acenaphthene	ND	8.7	330	ug/kg	1	3080253	08/14/03	08/22/03	EPA 8270C	
Acenaphthylene	ND	7.6	330				"	00/22/03	EPA 8270C	
Anthracene	ND	14	330	**		**		36		
Azobenzene	ND	20	330	**	11					
3enzidine	ND	1700	1700	*	Ca.					200
Benzoic acid	ND	2.7	1700							W
Benzo (a) anthracene	ND	7.6	330			2				
Benzo (b+k) fluoranthene (total)	ND	13	330	10.5	**		1.0			
Benzo (g,h,i) perylene	ND	8.8	330		16		77#3			
Benzo (a) pyrene	ND	10	330		.**					
Benzyl alcohol	ND	11	660	in	-					
Bis(2-chloroethoxy)methane	ND	9.1	330							
Bis(2-chloroethyl)ether	ND	15	330							
Bis(2-chloroisopropyl)ether	ND	16	330					0.		
Bis(2-ethylhexyl)phthalate	ND	9.3	330							
-Bromophenyl phenyl ether	ND	13	330	10.7						
lutyl benzyl phthalate	ND	11	330			40	1120			
-Chloroaniline	ND	58	660			100	140	70		
-Chloro-3-methylphenol	ND	11	660	0.000						
-Chloronaphthalene	ND	9.9	330					17447		
-Chlorophenol	ND	16	330						74	
-Chlorophenyl phenyl ether	ND	13	330							
hrysene	ND	11	330	-				2000		
ribenz (a,h) anthracene	ND	18	330	144						
ibenzofuran	ND	9.6	330	14					**	
i-n-butyl phthalate	ND	12	330				ü		"	
2-Dichlorobenzene	ND	16	330			(/21				
3-Dichlorobenzene	ND	14	330							
4-Dichlorobenzene	ND	15	330					040	E#	
3'-Dichlorobenzidine	ND	44	660			1000				
4-Dichlorophenol	ND	15	330							
iethyl phthalate	46	14							- *	
4-Dimethylphenol	ND		330						77	1
imethyl phthalate	ND	36	330			*	7			
6-Dinitro-2-methylphenol		11	330							
4-Dinitro-2-metnyipnenoi	ND	17	1700			100	* 11			
4-Dinitrophenor 4-Dinitrotoluene	ND	10	1700					- 144		
6-Dinitrotoluene	ND ND	20 13	330 330	,		#		- 10		

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

MALO





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis

P308071 Reported: 09/09/03 16:50

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
32D-SB06-15 (P308071-06) Soil	Sampled: 08/0-	4/03 12:45	Received:	08/04/03	14:17				HEE B	
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3080253	08/14/03	08/22/03	EPA 8270C	
Fluoranthene	ND	11	330	"	*		*			
Fluorene	ND	7.9	330		0.00		4.	**	¥	
Hexachlorobenzene	ND	15	330	.61	787	596	H .			
Hexachlorobutadiene	ND	17	330	75	0.00		75	*	*	
Hexachlorocyclopentadiene	ND	10	330		1.00		* .		F	
Hexachloroethane	ND	17	330	*				*	7.	
Indeno (1,2,3-cd) pyrene	ND	11	330		*	**			7.	
Isophorone	ND	14	330	**		"				
2-Methylnaphthalene	ND	10	330		*	-		*		
2-Methylphenol	ND	16	330	**	(#7		**			
4-Methylphenol	ND	11	330	**	(#)		11		W	
Naphthalene	ND	13	330		(#)	09		*	10	
2-Nitroaniline	ND	17	1700		(#)	**	*	*	#1	
3-Nitroaniline	ND	18	1700				10:5	*	#.	
4-Nitroaniline	ND	22	1700		100	12	*:			
Nitrobenzene	ND	16	330				70		*	
2-Nitrophenol	ND	14	330		**		"	7		
4-Nitrophenol	ND	23	1700	*	#	**				
N-Nitrosodimethylamine	ND	16	330	-	1 441	**	*		"	
N-Nitrosodiphenylamine	ND	17	330	*	44	14				
N-Nitrosodi-n-propylamine	ND	15	330	*	(4)		**		177	
Pentachlorophenol	ND	12	1700		(4):	-	*	597	ii.	
Phenanthrene	ND	14	330	9.	1.00	(8)	#1	77	40	
Phenol	ND	12	330	*			#		90	
Pyrene	ND	12	330		1,835		70			
1,2,4-Trichlorobenzene	ND	1.5	330		1.7		75			
2,4,5-Trichlorophenol	ND	14	330			7		-22		
2,4,6-Trichlorophenol	ND	9.4	330		*	**			*	
Surrogate: 2-Fluorophenol		50 %	11-12	0		(.861)	#	*	#.	
Surrogate: Phenol-d6		57 %	16-13	0		1.99	#:			
Surrogate: Nitrobenzene-d5		61 %	16-12	6		100		, w	н.	
Surrogate: 2-Fluorobiphenyl		65 %	28-13	4		190	*			
Surrogate: 2,4,6-Tribromophenol		75 %	51-14	4		7.96%	46	100	m.	
Surrogate: Terphenyl-d14		106 %	64-11	0				19		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 5, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5

32D-SB05-7

P308126 BNA 3SW

1

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
8/22/2003	Benzidine	-26.1	32D-SB05-2.5 32D-SB05-7	J detects UJ nondetects	A

3

P308126 BNA 3SW

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks with the following exceptions:

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
3080305BLK	8/18/2003	Di-n-butylphthalate	73.7 J	32D-SB05-2.5 32D-SB05-7

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within OC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

4

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

5

P308126 BNA 3SW

Aerojet RI/FS

Semivolatiles - Data Qualification Summary - SDG P308126

SDG	Sample	Compound	Flag	A or P	Reason
P308126	32D-SB05-2.5 32D-SB05-7	Benzidine	J detects UJ nondetects	A	CCV %D > <u>+</u> 25

Aerojet RI/FS

Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

P308126 BNA 3SW 6





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308126 Reported: 09/11/03 18:20

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB06-45 (P308126-03) Soil	Sampled: 08/0	04/03 15:30	Received	: 08/05/0	3 13:17					DU QUI
Surrogate: Phenol-d6		73 %	16-1.	30		3080305	08/18/03	08/22/03	EPA 8270C	
Surrogate: Nitrobenzene-d5		78 %	16-17	26					**	
Surrogate: 2-Fluorobiphenyl		84 %	28-1.	34		47			a a	
Surrogate: 2,4,6-Tribromophenol		82 %	51-1-	14		H-	- 56	740	*	
Surrogate: Terphenyl-d14		104 %	64-1	19		W.		- 00	20	
32D-SB05-2.5 (P308126-04) Soil	Sampled: 08/	05/03 10:15	Received	1: 08/05/0	3 13:17	4.5.				
Acenaphthene	ND	8.7	330	ug/kg	1	3080305	08/18/03	08/22/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	"	199	0.90	7.		17.	
Anthracene	ND	14	330		1.0		7.	7.7	"	
Azobenzene	ND	20	330	"				2	" -	
Benzidine	ND	1700	1700		1.5		-			W
Benzoic acid	ND	2.7	1700	"		**				
Benzo (a) anthracene	ND	7.6	330		7					
Benzo (b+k) fluoranthene (total)	ND	13	330							
Benzo (g,h,i) perylene	ND	8.8	330	"		**	7			
Benzo (a) pyrene	ND	10	330	.7		1.7		077		
Benzyl alcohol	ND	11	660						11 7 0	
Bis(2-chloroethoxy)methane	ND	9.1	330	- 7			"			
Bis(2-chloroethyl)ether	ND	15	330				**	*	*	
Bis(2-chloroisopropyl)ether	ND	16	330	7				*		
Bis(2-ethylhexyl)phthalate	ND	9.3	330	*	7			**		
4-Bromophenyl phenyl ether	ND	13	330					+		
Butyl benzyl phthalate	ND	11	330		11			*		
4-Chloroaniline	ND	58	660				-		- "	
4-Chloro-3-methylphenol	ND	11	660	- "		-#			**	
2-Chloronaphthalene	ND	9.9	330			"		*	**	
2-Chlorophenol	ND	16	330	7	**		*		- 48	
4-Chlorophenyl phenyl ether	ND	13	330				**		-	
Chrysene	ND	11	330		"		,,	*	OH .	
Dibenz (a,h) anthracene	ND	18	330	**			,,			
Dibenzofuran	ND	9.6	330		*	"	,,		10	
Di-n-butyl phthalate	ND	12	330	#	*		**			
1,2-Dichlorobenzene	ND	16	330	,			-			
1,3-Dichlorobenzene	ND	14	330			#	in .	**		
1,4-Dichlorobenzene	ND	15	330		**		**			
3,3'-Dichlorobenzidine	ND	44	660			*	**		200	

Sequoia Analytical - Petaluma





Project: Acrojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P308126 Reported: 09/11/03 18:20

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Remult	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
32D-SB05-2.5 (P308126-04) Soil	Sampled: 08/6	5/03 10:15	Received	1: 08/05/0	3 13:17		+171		N 7	
2,4-Dichlorophenol	ND	15	330	ug/kg	ij	3080305	08/18/03	08/22/03	EPA 8270C	
Diethyl phthalate	ND	14	330	11	4	DAY STATE	# 01.07	WO ALTOS	GEN 8270C	
2,4-Dimethylphenol	ND	36	330	11	194	19	40	W		
Dimethyl phthalate	ND	11	330	0.7		56	190	W.		
4,6-Dinitro-2-methylphenol	ND	17	1700	-		16		0		
2.4-Dinitrophenol	ND	10	1700				41			
2,4-Dinitrotoluene	ND	20	330	100			1967			
2,6-Dinitrotoluene	ND	13	330			14	1.00	22	1141	
Di-n-octyl phthalate	ND	11	330	(#)			0.00			
Fluoranthene	ND	11	330	(10)			-		46	
Fluorene	ND	7.9	330	100						
Hexachlorobenzene	ND	15	330		-11					
Hexachlorobutadiene	ND	17	330							
Hexachlorocyclopentadiene	ND	10	330		#				T#.	
Hexachloroethane	ND	17	330	180	-		900		(146)	
Indeno (1,2,3-cd) pyrene	ND	11	330	10		*	100		(4)	
Isophorone	ND	14	330	1877			17	4.7	(#)	
2-Methylnaphthalene	ND						100	10.	(0)	
2-Methylphenol	ND	10	330			7				
I-Methylphenol	ND	16	330		70	27	17	1.87	- 04_	
Naphthalene		11	330	6"		**		36	- 11	
2-Nitroaniline	ND	13	330	7	- 7	10	177	1090		
S-Nitroaniline	ND	17	1700		"		15			
-Nitroaniline	ND	18	1700		"		."		289	
Vitrobenzene	ND	22	1700		**					
	ND	16	330	*		7		186	199	
-Nitrophenol	ND	14	330	"	1.5	*	7		.**	
-Nitrophenol	ND	23	1700					**		
N-Nitrosodimethylamine	ND	16	330	**	-	W.				
V-Nitrosodiphenylamine	ND	17	330		16-	W.		19		
Nitrosodi-n-propylamine	ND	15	330					-	-	
entachlorophenol	ND	12	1700		#			-	*	
Phenanthrene	ND	14	330	76	95	14	н		#	
'henol	ND	12	330	10		-			**	
yrene	ND	12	330	. 10	100	34		0	4	
.2,4-Trichlorobenzene	ND	15	330	Ä.	1141	140		Ti .	-	
,4,5-Trichlorophenol	ND	14	330	760	100	79	-	175		

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.





Project: Acrojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308126 Reported: 09/11/03 18:20

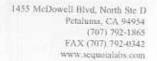
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB0S-2.5 (P308126-04) Soil	Sampled: 08/	05/03 10:15	Receive	d: 08/05/0	3 13:17					
2.4.6-Trichlorophenol	ND	9.4	330	ug/kg	1	3080305	08/18/03	08/22/03	EPA 8270C	DU Que
Surrogate: 2-Fluorophenol		60.06	11-1	20			,,	C.P.	=	
Surrogate: Phenol-d6		68 %	16-1	30		+			100	
Surrogate: Nitrobenzene-d5		72.96	16-1	26		lie.	-			
Surrogute: 2-Fluorobiphenyl		78.96	28-1.	34		-				
Surrogate: 2,4,6-Tribromophenol		78.96	51-1	44		- 11		**		
Surrogate: Terphenyl-d14		103 %	64-1			14			-	
32D-SB05-7 (P308126-05) Soil 8	Sampled: 08/05	/03 10:25	Received:	08/05/03	13:17					
Acenaphthene	ND	8.7	330	ug/kg	- 1	3080305	08/18/03	08/22/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	7		*	***	Allower profession	#	
Anthricene	ND	14	330	(19)		-10	1.0	7.	5.00	
Azobenzene	ND	20	330	0)25	.#	**	- 41			
3enzidine	ND	1700	1700		- 25		140			W
Benzoic acid	ND	2.7	1700	10			190	H2		~
Benzo (a) anthracene	ND	7.6	330	19			383	#:		
Benzo (b+k) fluoranthene (total)	ND	13	330	44	-			10:		
Benzo (g.h.i) perylene	ND	8.8	330	100				10		
Benzo (a) pyrene	ND	10	330							
Benzyl alcohol	ND	1.1	660							
3is(2-chloroethoxy)methane	ND	9.1	330	in .						
lis(2-chloroethyl)ether	ND	15	330	ii ii				2000	- #	
Bis(2-chloroisopropyl)ether	ND	16	330					0.41		
Bis(2-ethylhexyl)phthulate	ND	9.3	330	4						
-Bromophenyl phenyl ether	ND	13	330	10						
Butyl benzyl phthalate	ND	11	330		**					
-Chloroaniline	ND	58	660		44		**			
-Chloro-3-methylphenol	ND	11	660	56	2.	100	W.			
-Chloronaphthalene	ND	9.9	330		- 2	ii.		40		
-ChlorophenoI	ND	16	330	46	21	7				
-Chlorophenyl phenyl ether	ND	13	330	144	4					
hrysene	ND	11	330		41	200		14		
Dibenz (a,h) anthracene	ND	18	330		60	-		-		
Dibenzofuran	ND	9.6	330	100	163					
i-n-butyl phthalate	ND	12								
2-Dichlorobenzene	ND	16	330 330		-1/7	-				

Sequoia Analytical - Petaluma

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11/17/03 Pag 36





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Brace Lewis P308126 Reported: 09/11/03 18:20

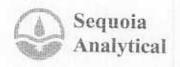
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB05-7 (P308126-05) Soil	Sampled: 08/05	/03 10:25	Received:	08/05/03	13:17					
1,3-Dichlorobenzene	ND	14	330	ug/kg	1	3080305	08/18/03	08/22/03	EPA-8270C	
1.4-Dichlorobenzene	ND	15	330		-	N .	**		#	
3,3 Dichlorobenzidine	ND	44	660	60	100	iii				
2.4-Dichlorophenol	ND	1.5	330	40	5%	7.6	2			
Diethyl phthalate	47	14	330	4	- 10	- 6	46			1
2,4-Dimethylphenol	ND	36	330	#1	44		47	in	45	
Dimethyl phthalate	ND	11	330				4.	10	20	
4,6-Dinitro-2-methylphenol	ND	17	1700	*	28	-11	1941	W	100	
2,4-Dinitrophenol	ND	10	1700		**	- 40	2563	20	741	
2,4-Dinitrotoluene	ND	20	330	100	. #	- 24	100	- 2	242	
2,6-Dinitrotoluene	ND	13	330	500	311		(4)	#	194	
Di-n-octyl phthalate	ND	-11	330	0.995	9	100	40			
Fluoranthene	ND	1.1	330	845		36	190		245	
Fluorene	ND	7.9	330	199		96	100	-		
Hexachlorobenzene	ND	15	330		- 10	96	100	46	40	
Hexachlorobutadiene	ND	17	330		31	100	10		-	
Hexachlorocyclopentadiene	ND	10	330	- 10				iii.	(144)	
Texachloroethane	ND	17	330	**			190		10.0	
ndeno (1,2,3-ed) pyrene	ND	11	330		10.	10	100	**		
sophorone	ND	14	330	17						
2-Methylnaphthalene	ND	10	330		**	*	9m	140	*	
2-Methylphenol	ND	16	330			161	- 44	2.00		
-Methylphenol	ND	- 11	330	-	*			- 11		
Vaphthalene	ND	13	330	70				1.00		
2-Nitroaniline	ND	17	1700	77	"			(10)		
-Nitroaniline	ND	18	1700							
l-Nitroaniline	ND	22	1700		111			1.00		
Vitrobenzene	ND	16	330		4			0.2		
-Nitrophenol	ND	14	330							
-Nitrophenol	ND	23	1700						- 10	
é-Nitrosodimethylamine	ND	16	330							
N-Nitrosodiphenylamine	ND	17	330		2	27	170			
-Nitrosodi-n-propylamine	ND	15	330	-	10	81			70	
entachlorophenol	ND	12	1700	100	91	146				
Thenanthrene	ND	14	330		4.1				-	
henol	ND	12	330	14	4	0.00				
yrene	ND	12	330	-14		20				

Sequoia Analytical - Petaluma

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Project: Acrojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308126 Reported: 09/11/03 18:20

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDE	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB05-7 (P308126-05) Soil	Sampled: 08/0	5/03 10:25	Received:	08/05/03	13:17		5.70 - 10.11.50			More
1,2,4-Trichlorobenzene	ND	15	330	ug/kg		7020205	08/18/03	20142000	24400000	
2,4,5-Trichlorophenol	ND	14:	330	ng-ag	- 10	3080303	08/18/03	08/22/03	EPA 8270C	
2,4,6-Trichlorophenol	ND	9.4	330	ж.	4			100		
Surrogate: 2-Fluorophenol		69 %s	11-1	20				*	-	
Surrogate: Phenol-d6		78.96	16-1							
Surrogate: Nitrobenzene-d5		82.96	16-1				,,	100		
Surrogate: 2-Fluorobiphenyl		89.26	28-1.			17				
Surrogate: 2,4,6-Tribromophenol		85.96	51-1					100	.44	
Surrogate: Terphenyl-d14		110 %	64-1			*				
32D-SB05-10 (P308126-06) Soil	Sampled: 08/0				** **			98		
	1071 (250)	TVDH-	Received	: 08/05/03	13:17					
Acenaphthene	ND	8.7	330	ug/kg	1	3080305	08/18/03	08/22/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	1		.0	100	#		
Anthracene	ND	14	330	0.37		011	(0)	10	41	
Azobenzene	ND	20	330	1.0		-	(0)	40	040	
Benzidine	ND	1700	1700	1977		28	1.00	1.6	. 40	
Benzoie acid	ND	2.7	1700			25				
denzo (a) anthracene	ND	7.6	330		25			+3	1911	
Benzo (b+k) fluoranthene (total)	ND	13	330	77		10	195	#1	100	
Benzo (g.h,i) perylene	ND	8.8	330	7.		167	100	0	242	
Benzo (a) pyrene	ND	10	330	*			100		in-	
Benzyl alcohol	ND	11	660	-	**		1.0			
3is(2-chloroethoxy)methane	ND	9.1	330				- 11	(40)		
Bis(2-chloroethyl)ether	ND	15	330	· u		0		27402		
lis(2-chloroisopropyl)ether	ND	16	330	75		"				
lis(2-ethylhexyl)phthalate	ND	9.3	330				"	-		
-Bromophenyl phenyl ether	ND	13	330	100			11			
Sutyl benzyl phthalate	ND	11	330	100	4		,,			
-Chloroaniline	ND	58	660	18	2	8	-	:#7	**	
-Chloro-3-methylphenol	ND	- 11	660					0.00		
-Chloronaphthalene	ND	9.9	330			7				
-Chlorophenol	ND	16	330		65					
-Chlorophenyl phenyl ether	ND	13	330	-		Val.				
hrysenc	ND	11	330	W	146	100				
ibenz (a,h) anthracene	ND	18	330	W						
ibenzofuran	ND	9.6	330		192	643		17.75	7	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

4/12/03

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 6, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308139

Sample Identification

38D-SB08-2.5 38D-SB08-20

P30139 BNA 3SW 1

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks with the following exceptions:

P30139 BNA 3SW 3

Method Blank ID	Extraction Date	Compound	Concentration	Associated Samples
3080305BLK	8/18/2003	Di-n-butylphthalate	73.7 J	39D-SB08-2.5 39D-SB08-20

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

4

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

P30139 BNA 3SW

5

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P308139

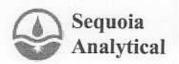
No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308139

No Sample Data Qualified in this SDG

P30139 BNA 3SW 6





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308139 Reported: 09/08/03 11:24

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
38D-SB08-2.5 (P308139-01) Soil	Sampled: 08/0	06/03 08:35	Received	: 08/06/0	3 14:20					
Acenaphthene	ND	8.7	330	ug/kg	1.	3080305	08/18/03	08/22/03	EPA 8270C	
Acenaphthylene	ND	7.6	330				*			
Anthracene	ND	14	330	18			**			
Azobenzene	ND	20	330	10						
Benzidine	ND	1700	1700		*	100		*		
Benzoic acid	ND	2.7	1700	**		6.0			.**	
Benzo (a) anthracene	ND	7.6	330	я	#				**	
Benzo (b+k) fluoranthene (total)	ND	13	330		97	(10)	185			
Benzo (g,h,i) perylene	ND	8.8	330		52					
Benzo (a) pyrene	ND	10	330						-	
Benzyl alcohol	ND	11	660	-		w				
Bis(2-chloroethoxy)methane	ND	9.1	330	-						
Bis(2-chloroethyl)ether	ND	15	330		4	**				
Bis(2-chloroisopropyl)ether	ND	16	330	#	#	100	n	- 1		
Bis(2-ethylhexyl)phthalate	ND	9.3	330	- 14	16		96	.00	-	
4-Bromophenyl phenyl ether	ND	13	330	74		- 4	**	- 1	-	
Butyl benzyl phthalate	ND	11	330	2.95		190	16	29		
4-Chloroaniline	ND	58	660	,,						
4-Chloro-3-methylphenol	ND	11	660						,,	
2-Chloronaphthalene	ND	9,9	330			100				
2-Chlorophenol	ND	16	330	*						
4-Chlorophenyl phenyl ether	ND	13	330		100				#.	
Chrysene	ND	11	330			10		-		
Dibenz (a,h) anthracene	ND	18	330			*			**	
Dibenzofuran	ND	9.6	330		- 11					
Di-n-butyl phthalate	ND	12	330							
1,2-Dichlorobenzene	ND	16	330						,	
1,3-Dichlorobenzene	ND	14	330							
1.4-Dichlorobenzene	ND	15								
3,3"-Dichlorobenzidine			330							
	ND	44	660	-				-		
2,4-Dichlorophenol	ND	15	330							
Diethyl phthalate	ND	14	330	-						
2,4-Dimethylphenol	ND	36	330							
Dimethyl phthalate	ND	11	330							
4,6-Dinitro-2-methylphenol	ND	17	1700	7			7			
2,4-Dinitrophenol	ND	10	1700					2		
2,4-Dinitrotoluene	ND	20	330							
2,6-Dinitrotoluene	ND	13	330	991				- 4	"	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Page 4 of 28





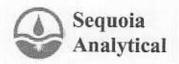
Project: Aerojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P308139 Reported: 09/08/03 11:24

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
38D-SB08-2.5 (P308139-01) Seil	Sampled: 08/	06/03 08:35	Received	: 08/06/0	3 14:20					
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3080305	08/18/03	08/22/03	EPA 8270C	
Fluoranthene	ND	-11	330		*	"	-			
Fluorene	ND	7.9	330	**	#	-		*		
Hexachlorobenzene	ND	15	330	**						
Hexachlorobutadiene	ND	17	330	**		#	н			
Hexachlorocyclopentadiene	ND	10	330	-		167	200	*	*	
Hexachloroethane	ND	17	330		#			196	100	
Indeno (1,2,3-ed) pyrene	ND	11	330	**	0		26			
Isophorone	ND	14	330		60	- 60		(9)		
2-Methylnaphthalene	ND	10	330	**			.7			
2-Methylphenol	ND	16	330	**			*			
4-Methylphenol	ND	11	330	19				-	**	
Naphthalene	ND	13	330		- 4		ii ii	40	-	
2-Nitroaniline	ND	17	1700		#1			140		
3-Nitroaniline	ND	18	1700	:H	0.0		184	7.6		
4-Nitroaniline	ND	22	1700	16		04.	- 14	(4)	**	
Nitrobenzene	ND	16	330		0.1	1.00				
2-Nitrophenol	ND	14	330				16	-		
4-Nitrophenol	ND	23	1700		7					
N-Nitrosodimethylamine	ND	16	330							
N-Nitrosodiphenylamine	ND	17	330	18	16					
N-Nitrosodi-n-propylamine	ND	15	330	*	196	247	Ĥ.			
Pentachlorophenol	ND	12	1700	16	16		**	- 4		
Phenanthrene	ND	14	330			: (4)	96	**		
Phenol	ND	12	330	75	90	300	-91	7.0		
Pyrene	ND	12	330		75	0.9%	77			
1,2,4-Trichlorobenzene	ND	15	330							
2,4,5-Trichlorophenol	ND	14	330	*			*			
2,4,6-Trichlorophenol	ND	9.4	330		-			*		
Surrogate: 2-Fluorophenol		32 %	11-12	20		100		(#)		
Surrogate: Phenol-d6		40 %	16-13	0		100			*	
Surrogate: Nitrobenzene-d5		41.96	16-12	26		. Mc	.M			
Surrogate: 2-Fluorobiphenyl		48 %	28-13					**	are .	
Surrogate: 2,4,6-Tribromophenol		80 %	51-14						π	
Surrogate: Terphenyl-d14		92 %	64-11							



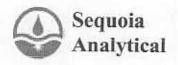


Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308139 Reported: 09/08/03 11:24

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
38D-SB08-20 (P308139-02) Soil	Sampled: 08/0	06/03 10:15	Received	08/06/03	14:20					704700
Acenaphthene	ND	8.7	330	ug/kg	1	3080305	08/18/03	08/22/03	EPA 8270C	
Acenaphthylene	ND	7.6	330							
Anthracene	ND	14	330	- 10				**	77	
Azobenzene	ND	20	330	- 4						
Benzidine	ND	1700	1700	- 44	**	#			,,	
Benzoic acid	ND	2.7	1700		"	- 6		- 100	10	
Benzo (a) anthracene	ND	7.6	330			H .	0	160		
Benzo (b+k) fluoranthene (total)	ND	13	330	125		9.5	*		198	
Benzo (g,h,i) perylene	ND	8.8	330	28	*		.0			
Benzo (a) pyrene	ND	10	330	*	7.		- 1			
Benzyl alcohol	ND	11	660							
Bis(2-chloroethoxy)methane	ND	9.1	330	**				,,		
Bis(2-chloroethyl)ether	ND	15	330	10	*					
Bis(2-chloroisopropyl)ether	ND	16	330		- 2	12	*		-	
Bis(2-ethylhexyl)phthalate	ND	9.3	330	58		(+)	-	690	**	
4-Bromophenyl phenyl ether	ND	13	330		0.0		- 14	0.0		
Butyl benzyl phthalate	ND	11	330		6.7	1.0		100	"	
1-Chloroaniline	ND	58	660				- Ne			
4-Chloro-3-methylphenol	ND	11	660	*						
2-Chloronaphthalene	ND	9.9	330						w	
2-Chlorophenol	ND	16	330							
4-Chlorophenyl phenyl ether	ND	13	330	10			**	4		
Chrysene	ND	11	330	96			-	- 66	- 167	
Dibenz (a,h) anthracene	ND	18	330				36	-66	-	
Dibenzofuran	ND	9.6	330		(4)			**		
Di-n-butyl phthalate	ND	12	330	11						
.2-Dichlorobenzene	ND	16	330	,				- #		
.3-Dichlorobenzene	ND	14	330	11					10'	
,4-Dichlorobenzene	ND	15	330							
3,3'-Dichlorobenzidine	ND	44	660	-		**				
2,4-Dichlorophenol	ND	15	330	**	(4)					
Diethyl phthalate	ND	14	330	**		16.7		59		
2,4-Dimethylphenol	ND	36	330	**	**				11	
Dimethyl phthalate	ND	11	330					- 10		
4,6-Dinitro-2-methylphenol	ND	17	1700	,,					,,	
2,4-Dinitrophenol	ND	10	1700		w		-	-		
2,4-Dinitrotoluene	ND	20	330		in .					
2,6-Dinitrotoluene	ND	13	330				21			





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308139 Reported: 09/08/03 11:24

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
38D-SB08-20 (P308139-02) Soil	Sampled: 08/0	6/03 10:15	Received	08/06/03	14:20					
Di-n-octyl phthalate	ND	11	330	ug/kg	1	3080305	08/18/03	08/22/03	EPA 8270C	
Fluoranthene	ND	11	330	"					*	
Fluorene	ND	7.9	330		11					
Hexachlorobenzene	ND	15	330	44					.,,	
Hexachlorobutadiene	ND	17	330		100		12			
Hexachlorocyclopentadiene	ND	10	330	(#		100	W			
Hexachloroethane	ND	17	330		*	6.		(47)	4	
Indeno (1,2,3-cd) pyrene	ND	11	330	. 10	7.0	3.0	**		-	
Isophorone	ND	14	330		100				**	
2-Methylnaphthalene	ND	10	330		17		- 2	(80)		
2-Methylphenol	ND	16	330	*	+	10				
4-Methylphenol	ND	11	330	100	**					
Naphthalene	ND	13	330		#	100				
2-Nitroaniline	ND	17	1700	10	#/)	(#.)	-			
3-Nitroaniline	ND	18	1700		10	7.0			- 4	
4-Nitroaniline	ND	22	1700		10.5	1.00			94	
Nitrobenzene	ND	16	330	**		(4)	76			
2-Nitrophenol	ND	14	330			3.90		2.8		
4-Nitrophenol	ND	23	1700							
N-Nitrosodimethylamine	ND	16	330	**				,		
N-Nitrosodiphenylamine	ND	17	330		10	*		- 1	**	
N-Nitrosodi-n-propylamine	ND	15	330	.H.				-	**	
Pentachlorophenol	ND	12	1700	W	(4)	(4)			ii.	
Phenanthrene	ND	14	330	#		10.5			11	
Phenol	ND	12	330	7.	7.0	7.87	*		**	
Pyrene	ND	12	330		1.5	100			**	
1,2,4-Trichlorobenzene	ND	15	330	**		10				
2,4,5-Trichlorophenol	ND	14	330							
2,4,6-Trichlorophenol	ND	9.4	330	-		. 11	11		*	
Surrogate: 2-Fluorophenol		63 %	11-12	0		**	75		M.	
Surrogate: Phenol-d6		72 %	16-13	0		285		28	W	
Surrogate: Nitrobenzene-d5		75 %	16-12	6		**	375		*	
Surrogate: 2-Fluorobiphenyl		87.96	28-13	4		3.5	- 7			
Surrogate: 2,4,6-Tribromophenol		89 %	51-14	4		141		27		
Surrogate: Terphenyl-d14		110 %	64-11	0		140			. 10	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 7, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308140

Sample Identification

33D-SB01-1

33D-SB01-5

33D-SB01-10

P30140 BNA 3SW

1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

P30140 BNA 3SW 3

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The sample used for the matrix spike was not related to this site. Therefore, the results did affect the sample results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

P30140 BNA 3SW

5

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P308140

No Sample Data Qualified in this SDG

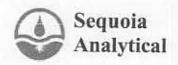
Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308140

No Sample Data Qualified in this SDG

6

P30140 BNA 3SW





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308140 Reported: 09/03/03 12:51

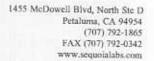
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
33D-SB01-1 (P308140-01) Soil	Sampled: 08/07	7/03 08:34	Received:	08/07/03	13:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Acenaphthylene	ND	7.6	330			11	#	*	BEA GEAGE	
Anthracene	ND	14	330	ie.		**				
Azobenzene	ND	20	330	-	ii.		Vi			
Benzidine	ND	1700	1700	- N	2	ii.	- 10	***	100	
Benzoic acid	ND	2.7	1700	(9)		W				
Benzo (a) anthracene	ND	7.6	330	*		W.	- 14			
Benzo (b+k) fluoranthene (total)	ND	13	330	-		*	14			
Benzo (g,h,i) perylene	ND	8.8	330			11.				
Benzo (a) pyrene	ND	10	330	**	**		- 1	-		
Benzyl alcohol	ND	11	660	596		**		-		
Bis(2-chloroethoxy)methane	ND	9.1	330						ii ii	
Bis(2-chloroethyl)ether	ND	15	330	**						
Bis(2-chloroisopropyl)ether	ND	16	330				194	100	*	
Bis(2-ethylhexyl)phthalate	ND	9.3	330			167		140		
4-Bromophenyl phenyl ether	ND	13	330					46		
Butyl benzyl phthalate	ND	11	330			#:			*	
4-Chloroaniline	ND	58	660	- 1		9.5	- 64	(m)		
4-Chloro-3-methylphenol	ND	11	660		85			100	11	
2-Chloronaphthalene	ND	9.9	330		60			147		
2-Chlorophenol	ND	16	330				**	14	**	
4-Chlorophenyl phenyl ether	ND	13	330		191	2.00	**			
Chrysene	ND	11	330	**					-	
Dibenz (a,h) anthracene	ND	18	330					1.00	-	
Dibenzofuran	ND	9.6	330	-		. 0.		-		
Di-n-butyl phthalate	ND	12	330						-	
1,2-Dichlorobenzene	ND	16	330		1 11		*			
1,3-Dichlorobenzene	ND	14	330	-						
,4-Dichlorobenzene	ND	15	330						16	
3,3'-Dichlorobenzidine	ND	44	660		- 41			-		
2,4-Dichlorophenol	ND	15	330			**		-	"	
Diethyl phthalate	ND	14	330		**					
2,4-Dimethylphenol	ND	36	330		**	**	"			
Dimethyl phthalate	ND	11	330	100	**					
4,6-Dinitro-2-methylphenol	ND	17	1700		**					
2,4-Dinitrophenol	ND	10	1700							
a	25.00	10	1.700							

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Page 5 of 37





Project Number: N/A Project Manager: Bruce Lewis

P308140 Reported: 09/03/03 12:51

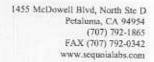
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
33D-SB01-1 (P308140-01) Soil	Sampled: 08/07	/03 08:34	Received:	08/07/03	13:10					
2,4-Dinitrotoluene	ND	20	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
2,6-Dinitrotoluene	ND	13	330	41		"		#	E1 14 62 70 C	
Di-n-octyl phthalate	ND	П	330	-	- ii			2	**	
Fluoranthene	ND	11	330	+	W		1241			
Fluorene	ND	7.9	330	55655				107		
Hexachlorobenzene	ND	15	330			W.		100		
Hexachlorobutadiene	ND	17	330	365			40	24		
Hexachlorocyclopentadiene	ND	10	330	100	**	W	(6)	104		
Hexachloroethane	ND	17	330	- 10	26		w			
Indeno (1,2,3-cd) pyrene	ND	11	330	*		. 66	No.	1.0		
Sophorone	ND	14	330		*		14			
2-Methylnaphthalene	ND	10	330					2.00	-	
2-Methylphenol	ND	16	330			40				
4-Methylphenol	ND	11	330				- 14			
Naphthalene	ND	13	330	-	**	16				
2-Nitroaniline	ND	17	1700			**	10	160		
3-Nitroaniline	ND	18	1700				- 74			
4-Nitroaniline	ND	22	1700			#12				
Vitrobenzene	ND	16	330	*		110	-		-	
2-Nitrophenol	ND	14	330		100	н.		700		
l-Nitrophenol	ND	23	1700		16	н.				
N-Nitrosodimethylamine	ND	16	330	W			200	100		
N-Nitrosodiphenylamine	ND	17	330							
V-Nitrosodi-n-propylamine	ND	15	330	"			-			
entachlorophenol	ND	12	1700							
henanthrene	ND	14	330		100					
henol	ND	12	330							
ryrene	ND	12	330				10			
,2,4-Trichlorobenzene	ND	15	330		*					
,4,5-Trichlorophenol	ND	14	330		**	-				
,4,6-Trichlorophenol	ND	9.4	330	10			*		"	
urrogate: 2-Fluorophenol		52 %	11-12	0		(A)		*		
urrogate: Phenol-d6		64 %	16-13	0				(#)		
urrogate: Nitrobenzene-d5		59 %	16-12	6		**	10	(96)	re .	
Surrogate: 2-Fluorobiphenyl		67 %	28-13-	4		2.00		(140)	, in	
urrogate: 2,4,6-Tribromophenol		89 %	51-14							

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Page 6 of 37





Project: Aerojet RI/FS Project Number: N/A

P308140 Reported: Project Manager: Bruce Lewis 09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
33D-SB01-1 (P308140-01) Soil	Sampled: 08/0	7/03 08:34	Received:	08/07/03	13:10					
Surrogate: Terphenyl-d14		106 %	64-1	19		3080396	08/21/03	08/28/03	EPA 8270C	
33D-SB01-5 (P308140-02) Soil	Sampled: 08/0	7/03 08:55	Received:	08/07/03	13:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Acenaphthylene	ND	7.6	330		"				"	
Anthracene	ND	14	330			*			7.007	
Azobenzene	ND	20	330			,,		*	(#)	
Benzidine	ND	1700	1700	**	**		-		100.7	
Benzoic acid	ND	2.7	1700		17			- 40	w);	
Benzo (a) anthracene	ND	7.6	330	15411						
Benzo (b+k) fluoranthene (total)	ND	13	330	-		**	+			
Benzo (g,h,i) perylene	ND	8.8	330		11	44			. #	
Benzo (a) pyrene	ND	10	330	14						
Benzyl alcohol	ND	11	660	24				**		
Bis(2-chloroethoxy)methane	ND	9.1	330	24					-	
Bis(2-chloroethyl)ether	ND	15	330	- 1		16			2	
Bis(2-chloroisopropyl)ether	ND	16	330	-	ii.					
Bis(2-ethylhexyl)phthalate	ND	9.3	330		¥8	2				
4-Bromophenyl phenyl ether	ND	13	330	- iii	40					
Butyl benzyl phthalate	ND	11	330							
1-Chloroaniline	ND	58	660	. 11	-	H .	-	*		
4-Chloro-3-methylphenol	ND	11	660	16	H.	6.	-	140		
2-Chloronaphthalene	ND	9.9	330	146	60	- 11		100	2	
2-Chlorophenol	ND	16	330		6		- 2	1960		
4-Chlorophenyl phenyl ether	ND	13	330	18	#7	W.	- 4	190		
Chrysene	ND	11	330	10		- 10	-11	-	*	
Dibenz (a,h) anthracene	ND	18	330		6		**			
Dibenzofuran	ND	9.6	330		н.	(4)	W.	4.	**	
Di-n-butyl phthalate	ND	12	330	100	0.	1761	W.	-		
,2-Dichlorobenzene	ND	16	330		. 11		**	in .		
,3-Dichlorobenzene	ND	14	330		(0)	- 06:			-	
.4-Dichlorobenzene	ND	15	330						-	
3,3°-Dichlorobenzidine	ND	44	660					- 11		
2,4-Dichlorophenol	ND	15	330							
Diethyl phthalate	ND	14	330	-		***				
4,4-Dimethylphenol	ND	36	330				*			
Dimethyl phthalate	ND	11	330	**						

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight hasis. This analytical report must be reproduced in its entirety.

4/10/03 Page 7 of 37



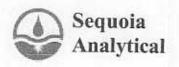


Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308140 Reported: 09/03/03 12:51

Analyte	Result	MDL.	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
33D-SB01-5 (P308140-02) Soil	Sampled: 08/07	7/03 08:55	Received:	08/07/03	13:10					
4,6-Dinitro-2-methylphenol	ND	17	1700	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
2,4-Dinitrophenol	ND	10	1700	#			#	# W	#	
2,4-Dinitrotoluene	ND	20	330		96	-				
2,6-Dinitrotoluene	ND	13	330	160		W.	765			
Di-n-octyl phthalate	ND	11	330	262	*	10	4		(4)	
Fluoranthene	ND	11	330	(8)	10	20	100			
Fluorene	ND	7.9	330	(8)	10	91.	- 06		14	
Hexachlorobenzene	ND	15	330			*	Ti .	7.67		
Hexachlorobutadiene	ND	17	330	#			100	(4)		
Hexachlorocyclopentadiene	ND	10	330	-4			**			
Hexachloroethane	ND	17	330	1.6			14	2.00		
Indeno (1,2,3-ed) pyrene	ND	11	330	70						
Isophorone	ND	14	330		#		**	**	10	
2-Methylnaphthalene	ND	10	330		*	**				
2-Methylphenol	ND	16	330	"	#1		- 11	in .		
4-Methylphenol	ND	11	330	**			31			
Naphthalene	ND	13	330	78						
2-Nitrouniline	ND	17	1700	. 11						
3-Nitroaniline	ND	18	1700		10	0.0				
4-Nitroaniline	ND	22	1700		100					
Nitrobenzene	ND	16	330						96	
2-Nitrophenol	ND	14	330		н.	(C#)				
4-Nitrophenol	ND	23	1700							
N-Nitrosodimethylamine	ND	16	330		0.00					
N-Nitrosodiphenylamine	ND	17	330			1040				
N-Nitrosodi-n-propylamine	ND	15	330		1977					
Pentachlorophenol	ND	12	1700	-	*					
Phenanthrene	ND	14	330					27	_	
Phenol	ND	12	330						-0-	
Pyrene	ND	12	330					17		
,2,4-Trichlorobenzene	ND	15	330				-			
2,4,5-Trichlorophenol	ND	15	330							
2,4,6-Trichlorophenol	ND	9.4	330			*				
Surrogate: 2-Fluorophenol	2122	52 %	11-120			744	-	-		
Surrogate: Phenol-d6		64 %	16-130				-			
Surrogate: Nitrobenzene-d5		58 %	16-130							
mir agaite marootneedeeds		20 70	10-120			3.305		0.00		





Project: Acrojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308140 Reported: 09/03/03 12:51

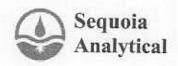
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDI.	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
33D-SB01-5 (P308140-02) Soil	Sampled: 08/0	7/03 08:55	Received:	08/07/03	13:10					
Surrogate: 2-Fluorobiphenyl		59 %	28-1			3080396	08/21/03	08/28/03	EPA 8270C	
Surrogate: 2,4,6-Tribromophenol		68 %	51-14	S(8)				7	7.0	
Surrogate: Terphenyl-d14		107 %	64-11	19		"				
33D-SB01-10 (P308140-03) Soil	Sampled: 08/0	7/03 09:37	Received	: 08/07/03	3 13:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Acenaphthylene	ND	7.6	330				- 11		*	
Anthracene	ND	14	330	*	н		125	(19)	20	
Azobenzene	ND	20	330					(0)		
Benzidine	ND	1700	1700		и.					
Benzoie acid	ND	2.7	1700		**					
Benzo (a) anthracene	ND	7.6	330	-						
Benzo (b+k) fluoranthene (total)	ND	13	330	- 10				100	"	
Benzo (g,h,i) perylene	ND	8.8	330	**	**			**		
Benzo (a) pyrene	ND	10	330							
Benzyl alcohol	ND	11	660	**	ii.			"	-	
Bis(2-chloroethoxy)methane	ND	9.1	330	- 12	6.7					
Bis(2-chloroethyl)ether	ND	15	330		#				,,	
Bis(2-chloroisopropyl)ether	ND	16	330		*		**			
Bis(2-ethylhexyl)phthalate	45	9.3	330				_	,		1
I-Bromophenyl phenyl ether	ND	13	330	*		**			-	- 1
Butyl benzyl phthalate	ND	11	330	-	100					
l-Chloroaniline	ND	58	660	100		-	**			
-Chloro-3-methylphenol	ND	11	660	16						
2-Chloronaphthalene	ND	9.9	330	16	14	10		7		
2-Chlorophenol	ND	16	330	16			W-		**	
-Chlorophenyl phenyl ether	ND	13	330	*	-		¥:		**	
Chrysene	ND	11	330	**		260				
Dibenz (a,h) anthracene	ND	18	330	10	44	- 0	- 2	- 2	2	
Dibenzofuran	ND	9.6	330		(40)					
Di-n-butyl phthalate	ND	12	330	*	1960	240			W-	
,2-Dichlorobenzene	ND	16	330		7.60	243				
,3-Dichlorobenzene	ND	14	330							
,4-Dichlorobenzene	ND	15	330		0.00			10		
3'-Dichlorobenzidine	ND	44	660	110		- 10	**			
,4-Dichlorophenol	ND	15	330			54				
Diethyl phthalate	48	14	330			- 56				I

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308140 Reported: 09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

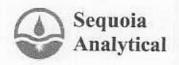
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes		
33D-SB01-10 (P308140-03) Soil	Sampled: 08/0	Sampled: 08/07/03 09:37 Received: 08/07/03 13:10										
2,4-Dimethylphenol	ND	36	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C			
Dimethyl phthalate	ND	11	330	#	#	"	-	# 100 20100	LI / 02/0C			
4,6-Dinitro-2-methylphenol	ND	17	1700		9				*			
2,4-Dinitrophenol	ND	10	1700	in.	#	*	101		10			
2,4-Dinitrotoluene	ND	20	330	36	-		16	27				
2,6-Dinitrotoluene	ND	13	330	100		ii.	393	42				
Di-n-octyl phthalate	ND	11	330	(4)	10	W.	1900	6				
Fluoranthene	ND	11	330		**	*	190	-	-			
Fluorene	ND	7.9	330		16				-			
Hexachlorobenzene	ND	15	330		ii:		-	-	Vi.			
Hexachlorobutadiene	ND	17	330		4			7.67				
Hexachlorocyclopentadiene	ND	10	330	59	100	- W	100	0.00				
Hexachloroethane	ND	17	330		100	9		100				
Indeno (1,2,3-ed) pyrene	ND	11	330			10	54	- 4				
Isophorone	ND	14	330			10		14				
2-Methylnaphthalene	ND	10	330									
2-Methylphenol	ND	16	330		10							
1-Methylphenol	ND	11	330			H2	-96					
Naphthalene	ND	13	330			10		**				
2-Nitroaniline	ND	17	1700			0.						
3-Nitroaniline	ND	18	1700	- 14								
1-Nitroaniline	ND	22	1700									
Nitrobenzene	ND	16	330		*							
2-Nitrophenol	ND	14	330		-							
l-Nitrophenol	ND	23	1700	,,	91		**		*			
N-Nitrosodimethylamine	ND	16	330	,,								
N-Nitrosodiphenylamine	ND	17	330	**								
N-Nitrosodi-n-propylamine	ND	15	330	77								
Pentachlorophenol	ND	12	1700	**								
Phenanthrene	ND	14	330		,,	- 10						
henol	ND	12	330									
Yrene	ND	12	330									
,2,4-Trichlorobenzene	ND	15	330									
4,5-Trichlorophenol	ND	14	330					4				
,4,6-Trichlorophenol	ND	9.4	330									
Surrogate: 2-Fluorophenol	1417	62 %	220			117.5	.0/		Λ			

Sequoia Analytical - Petaluma

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Page 10 of 37





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308140 Reported: 09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
33D-SB01-10 (P308140-03) Soil	Sampled: 08/0	07/03 09:37	Received: 08/07/0		3 13:10				1000000	
Surrogate: Phenol-d6		73 %	16-1.	16-130		3080396	08/21/03	08/28/03	EPA 8270C	
Surrogate: Nitrobenzene-d5		65 %	16-1.	26			*		#	
Surrogate: 2-Fluorobiphenvl		65 %	28-1.	3.4			100	40	798	
Surrogate: 2,4,6-Tribromophenol		83 %	51-1-	14			7.00	W.	160	
Surrogate: Terphenyl-d14		106 %	64-119			p-	1.00	100	#	
33D-SB01-15 (P308140-04) Soil	Sampled: 08/0	7/03 09:53	Received: 08/07/0		3 13:10					
Acenaphthene	ND	8.7	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	14						
Anthracene	ND	14	330	**			- "			
Azobenzene	ND	20	330	- 11	94	1.0	**	u	**	
Benzidine	ND	1700	1700	ii ii	- 1	in in	-	No.		
Benzoic acid	ND	2.7	1700	. 11	1.4		**	- 14		
Benzo (a) anthracene	ND	7.6	330	*	*	197	-	- 11	-	
Benzo (b+k) fluoranthene (total)	ND	13	330	-				*	2	
Benzo (g,h,i) perylene	ND	8.8	330	-	(4)	100		- 4	10	
Benzo (a) pyrene	ND	10	330	100		160	*			
Benzyl alcohol	ND	11	660	10		+	W.	19		
Bis(2-chloroethoxy)methane	ND	9.1	330	10		* .	ñ.			
Bis(2-chloroethyl)ether	ND	15	330	11			iii		W.	
Bis(2-chloroisopropyl)ether	ND	16	330	.00			0.	(9)	#	
Bis(2-ethylhexyl)phthalate	ND	9.3	330			100	*		#6.	
4-Bromophenyl phenyl ether	ND	13	330	11		-	0.0		#	
Butyl benzyl phthalate	ND	11	330	**		0.00	#C		46	
4-Chloroaniline	ND	58	660	-0.	196		**			
4-Chloro-3-methylphenol	ND	11	660	15	191	**	#:	#	#1	
2-Chloronaphthalene	ND	9.9	330	#		0.1			**	
2-Chlorophenol	ND	16	330	.55		0	#1	7#	**	
4-Chlorophenyl phenyl ether	ND	13	330	*					*	
Chrysene	ND	11	330	#1	96	0965	, pt.	*		
Dibenz (a,h) anthracene	ND	18	330							
Dibenzofuran	ND	9.6	330		100		*			
Di-n-butyl phthalate	ND	12	330	**	1.0		*	38	*	
1,2-Dichlorobenzene	ND	16	330	W		100	-		-	
1,3-Dichlorobenzene	ND	14	330				7.			
1,4-Dichlorobenzene	ND	15	330	10	27.	12.5				
3,3'-Dichlorobenzidine	ND	44	660		100	190		-8		

Sequoia Analytical - Petaluma

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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 8, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Semivolatiles

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308192

Sample Identification

39D-SB01-2.5

39D-SB01-5

39D-SB01-10

P30192 BNA 3SW

1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

P30192 BNA 3SW 3

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P	
39D-SB010-5	2-Fluorobiphenyl	23 (28-134)	None	None	None	

Since only one base neutral surrogate was outside of the QC limits, no qualifications are necessary.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The sample used for the matrix spike was not related to this site. Therefore, the results did affect the sample results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

4

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

P30192 BNA 3SW

5

Aerojet RI/FS Semivolatiles - Data Qualification Summary - SDG P308192

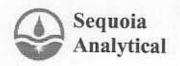
No Sample Data Qualified in this SDG

Aerojet RI/FS Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308192

No Sample Data Qualified in this SDG

P30192 BNA 3SW 6





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308192 Reported: 09/02/03 17:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
39D-SB01-2.5 (P308192-01) Soil	Sampled: 08/	Sampled: 08/08/03 08:34 Received: 08/08/03 14:30								
Acenaphthene	ND	8.7	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	44	- 10					
Anthracene	ND	14	330	91	1.41				-	
Azobenzene	ND	20	330	-	0.00	1.0				
Benzidine	ND	1700	1700	in .	2.67					
Benzoic acid	ND	2.7	1700	10	2.60	*				
Benzo (a) anthracene	ND	7.6	330	10			**			
Benzo (b+k) fluoranthene (total)	ND	13	330				**	***		
Benzo (g,h,i) perylene	ND	8.8	330	10	10		*	14	-	
Benzo (a) pyrene	ND	10	330		7.6	100	2			
Benzyl alcohol	ND	11	660	*		290		100		
Bis(2-chloroethoxy)methane	ND	9.1	330	#:						
Bis(2-chloroethyl)ether	ND	15	330	#0	W.					
Bis(2-chloroisopropyl)ether	ND	16	330	*		- 6	**	-		
Bis(2-ethylhexyl)phthalate	100	9.3	330	R.	. 44	340	90			J
1-Bromophenyl phenyl ether	ND	13	330	41).			#.		40	,
Butyl benzyl phthalate	ND	11	330	#C					-	
-Chloroaniline	ND	58	660					. 6:		
I-Chloro-3-methylphenol	ND	11	660			- 10				
2-Chloronaphthalene	ND	9.9	330		0.99		100	-	**	
2-Chlorophenol	ND	16	330		On Con					
-Chlorophenyl phenyl ether	ND	13	330			***	- 10			
Chrysene	ND	11	330						100	
Dibenz (a,h) anthracene	ND	18	330							
Dibenzofuran	ND	9.6	330							
Di-n-butyl phthalate	ND	12	330			*				
,2-Dichlorobenzene	ND	16	330	*					0.000	
,3-Dichlorobenzene	ND	14	330	**					2000	
.4-Dichlorobenzene	ND	15	330	w			100		**	
.3 -Dichlorobenzidine	ND	44	660	**			*		1000	
,4-Dichlorophenol	ND	15	330		*				41	
Diethyl phthalate	ND	14	330							
,4-Dimethylphenol	ND	36	330							
Dimethyl phthalate	ND	11	330						11000	
,6-Dinitro-2-methylphenol	ND	17	1700						2070	
,4-Dinitrophenol	ND	10	1700							
.4-Dinitrotoluene	ND	20	330					- "		

Sequoia Analytical - Petaluma

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Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308192 Reported: 09/02/03 17:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

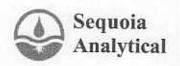
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
39D-SB01-2.5 (P308192-01) Soil	Sampled: 08/									
2,6-Dinitrotoluene	ND	13	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Di-n-octyl phthalate	ND	11	330	#		**		"	#	
Fluoranthene	ND	11	330	ii ii	(40)	(ii)			-	
Fluorene	ND	7.9	330							
Hexachlorobenzene	ND	15	330	in	(4)	-				
Hexachlorobutadiene	ND	17	330			365				
Hexachlorocyclopentadiene	ND	10	330				*			
Hexachloroethane	ND	17	330	ii.			-			
Indeno (1,2,3-cd) pyrene	ND	11	330	*	(4)	*	¥.		2	
Isophorone	ND	14	330	-		*				
2-Methylnaphthalene	ND	10	330		200	120	W			
2-Methylphenol	ND	16	330	(6)		(46)				
4-Methylphenol	ND	11	330	ii.	(4)	100		ii ii	**	
Naphthalene	ND	13	330		140	39	**			
2-Nitroaniline	ND	17	1700	W.		36		W		
3-Nitroaniline	ND	18	1700	40	100	196		- 6		
I-Nitroaniline	ND	22	1700			*				
Nitrobenzene	ND	16	330				W.		4	
2-Nitrophenol	ND	14	330		59				65	
l-Nitrophenol	ND	23	1700		200	ja .	16		6	
N-Nitrosodimethylamine	ND	16	330	0.0	- 10	.0	-	**		
N-Nitrosodiphenylamine	ND	17	330	1.00			560		(740)	
N-Nitrosodi-n-propylamine	ND	15	330		**				100	
entachlorophenol	ND	12	1700	1.00						
henanthrene	ND	14	330	(#)			0.00	167		
henol	ND	12	330		-					
yrene	ND	12	330			200				
,2,4-Trichlorobenzene	ND	15	330							
.4,5-Trichlorophenol	ND	14	330				-			
,4,6-Trichlorophenol	ND	9.4	330		14.	- 11				
urrogate: 2-Fluorophenol		43 %	11-12	0		*		**	#	
urrogate: Phenol-d6		62 %	16-13				46			
urrogate: Nitrobenzene-d5		47 %	16-12				+			
urrogate: 2-Fluorobiphenyl		65 %	28-13-							
urrogate: 2,4,6-Tribromophenol		81%	51-14							
urrogate: Terphenyl-d14		105 %	64-11						-	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Page 6 of 42





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308192 Reported: 09/02/03 17:33

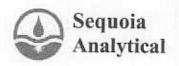
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
39D-SB01-5 (P308192-02) Soil	Sampled: 08/08	Received:	08/08/03	14:30						
Acenaphthene	ND	8.7	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Accnaphthylene	ND	7.6	330	**	16				"	
Anthracene	ND	14	330	16	- 30	100				
Azobenzene	ND	20	330		100	200	*			
Benzidine	ND	1700	1700	H	161	100		1		
Benzoic acid	ND	2.7	1700	46	190	246	W			
Benzo (a) anthracene	ND	7.6	330		100	- 0		*	- 2	
Benzo (b+k) fluoranthene (total)	ND	13	330	10		4.			**	
Benzo (g,h,i) perylene	ND	8.8	330				-		*	
Benzo (a) pyrene	ND	10	330	10	740	340		*	-	
Benzyl alcohol	ND	11	660		300	100	W.			
Bis(2-chloroethoxy)methane	ND	9.1	330	#	(4)	10				
Bis(2-chloroethyl)ether	ND	15	330			1.00	*	***	4	
Bis(2-chloroisopropyl)ether	ND	16	330	*			W		-	
Bis(2-ethylhexyl)phthalate	68	9.3	330	H.		100	**			1
4-Bromophenyl phenyl ether	ND	13	330	-	***					
Butyl benzyl phthalate	ND	11	330	-	1.0	*	**		11	
4-Chloroaniline	ND	58	660		1002		**		n÷	
4-Chloro-3-methylphenol	ND	11	660		1907	200	W2			
2-Chloronaphthalene	ND	9.9	330		1.40	7.9	**			
2-Chlorophenol	ND	16	330	90.	700				-	
4-Chlorophenyl phenyl ether	ND	13	330	41				.41		
Chrysene	ND	11	330		0,0					
Dibenz (a,h) anthracene	ND	18	330				10		*	
Dibenzofuran	ND	9.6	330				100		H-1	
Di-n-butyl phthalate	ND	12	330					-		
,2-Dichlorobenzene	ND	16	330						110	
,3-Dichlorobenzene	ND	14	330			"		,	1.00	
,4-Dichlorobenzene	ND	15	330						1.00	
3,3'-Dichlorobenzidine	ND	44	660						. 10	
2,4-Dichlorophenol	ND	15	330						146	
Diethyl phthalate	ND	14	330			"		11.	at .	
2,4-Dimethylphenol	ND	36	330	117						
Dimethyl phthalate	ND	11	330						1.00	
,6-Dinitro-2-methylphenol	ND	17	1700	u						
2,4-Dinitrophenol	ND	10	1700	**						
2.4-Dinitrotoluene	ND	20	330	al.					*	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P308192 Reported: 09/02/03 17:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Note
39D-SB01-5 (P308192-02) Soil	Sampled: 08/0	8/03 08:44	Received:	08/08/03	14:30					
2,6-Dinitrotoluene	ND	13	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Di-n-octyl phthalate	ND	11	330	"	(4)		"	11	E124 0270C	
Fluoranthene	ND	11	330	.0.		1.00	46			
Fluorene	ND	7.9	330	16		100			4	
Hexachlorobenzene	ND	15	330	-	(H)	5.00	. ii.			
Hexachlorobutadiene	ND	17	330	16	***					
Hexachlorocyclopentadiene	ND	10	330	**	*		16			
Hexachloroethane	ND	17	330							
Indeno (1,2,3-ed) pyrene	ND	11	330	*	78.0					
Isophorone	ND	14	330		((00))	**	*			
2-Methylnaphthalene	ND	10	330		200	**	#			
2-Methylphenol	ND	16	330		13800					
4-Methylphenol	ND	11	330							
Naphthalene	ND	13	330		16				-	
2-Nitroaniline	ND	17	1700							
3-Nitroaniline	ND	18	1700		н	**				
4-Nitroaniline	ND	22	1700							
Nitrobenzene	ND	16	330							
2-Nitrophenol	ND	14	330				н.	,,		
4-Nitrophenol	ND	23	1700							
N-Nitrosodimethylamine	ND	16	330				-			
N-Nitrosodiphenylamine	ND	17	330							
N-Nitrosodi-n-propylamine	ND	15	330	w						
Pentachlorophenol	ND	12	1700					2	*	
Phenanthrene	ND	14	330							
Phenol	ND	12	330						3.5	
Pyrene	ND	12	330						32#37	
1,2,4-Trichlorobenzene	ND	15				,			1	
2,4,5-Trichlorophenol	ND	13	330							
2,4,6-Trichlorophenol	ND	9.4	330 330						3.5	
Surrogate: 2-Fluorophenol	ND	10000	1819.1				,	"		_
		37.%	11-12					-		
Surrogate: Phenol-d6		57.%	16-13			"	*		W-1	
Surrogate: Nitrobenzene-d5		28 %	16-120				-	"		
Surrogate: 2-Fluorobiphenyl		23.96	28-13-			*	(e)	**	07 2 7	S-LIM
Surrogate: 2,4,6-Tribromophenol		71 %	51-14			100) (e)		*	
Surrogate: Terphenyl-d14		106 %	64-11	9		*	1.00	.e.		

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

1/1763 Page 8 of 42





Project: Aerojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P308192 Reported: 09/02/03 17:33

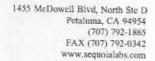
Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

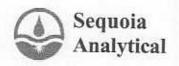
Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
39D-SB01-10 (P308192-03) Soil	Sampled: 08/0	8/03 08:54	Received	: 08/08/03	3 14:30					
Acenaphthene	ND	8.7	330	ug/kg	1	3080396	08/21/03	08/28/03	EPA 8270C	
Acenaphthylene	ND	7.6	330	#		+	=	#	EFA 8270C	
Anthracene	ND	14	330		**	14	10			
Azobenzene	ND	20	330	#.	40	Sec				
Benzidine	ND	1700	1700	#1	(4)				,,	
Benzoic acid	ND	2.7	1700	#1	*					
Benzo (a) anthracene	ND	7.6	330	-	0.0	#11	ŵ.			
Benzo (b+k) fluoranthene (total)	ND	13	330		297		ii.'			
Benzo (g,h,i) perylene	ND	8.8	330	160	(4.7		*			
Benzo (a) pyrene	ND	10	330	#3	*1	54				
Benzyl alcohol	ND	11	660		in .	79				
Bis(2-chloroethoxy)methane	ND	9.1	330	*:	-11					
Bis(2-chloroethyl)ether	ND	15	330							
Bis(2-chloroisopropyl)ether	ND	16	330	**		**	16			
Bis(2-ethylhexyl)phthalate	84	9.3	330	H 2			. 10			j
4-Bromophenyl phenyl ether	ND	13	330	9.7			100		14	,
Butyl benzyl phthalate	ND	11	330	1080		16	(14)	W	200	
4-Chloroaniline	ND	58	660			-	1.46			
4-Chloro-3-methylphenol	ND	11	660	(8)			796			
2-Chloronaphthalene	ND	9,9	330	1000	-			#2	**	
2-Chlorophenol	ND	16	330				100			
l-Chlorophenyl phenyl ether	ND	13	330	000	**	*			100	
Chrysene	ND	11	330		**	in.				
Dibenz (a,h) anthracene	ND	18	330	1.900	-	"				
Dibenzofuran	ND	9.6	330			11				
Di-n-butyl phthalate	ND	12	330			#6	-			
,2-Dichlorobenzene	ND	16	330			H				
,3-Dichlorobenzene	ND	14	330		"					
,4-Dichlorobenzene	ND	15	330	*						
,3'-Dichlorobenzidine	ND	44	660		77			100		
,4-Dichlorophenol	ND	15	330	,,	*			200	0.0	
Diethyl phthalate	ND	14	330	,,		,,		2000		
,4-Dimethylphenol	ND	36	330				-			
Dimethyl phthalate	ND	11	330							
,6-Dinitro-2-methylphenol	ND	17	1700	4						
,4-Dinitrophenol	ND	10	1700					(J.W)		
,4-Dinitrotoluene	ND	20	330	"					4"	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight hasis. This analytical report must be reproduced in its entirety.

Page 9 of 42





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308192 Reported: 09/02/03 17:33

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
39D-SB01-10 (P308192-03) Soil	Sampled: 08/0	08/03 08:54	Received	: 08/08/03	14:30					
2,6-Dinitrotoluene	ND	13	330	ug/kg	i	3050306	08/21/03	08/28/03	En a name	
Di-n-octyl phthalate	ND	11	330	"		#	08/21/03	08/28/03	EPA 8270C	
Fluoranthene	ND	11	330	in				10		
Fluorene	ND	7.9	330							
Hexachlorobenzene	ND	15	330			100				
Hexachlorobutadiene	ND	17	330							
Hexachlorocyclopentadiene	ND	10	330		160		**			
Hexachloroethane	ND	17	330		1975	12/				
Indeno (1,2,3-cd) pyrene	ND	11	330		197					
Isophorone	ND	14	330				20		***	
2-Methylnaphthalene	ND	10	330	*						
2-Methylphenol	ND	16	330	10.	34					
4-Methylphenol	ND	11	330	46			42		<u>"</u>	
Naphthalene	ND	13	330	W 1						
2-Nitroaniline	ND	17	1700	100	-	16				
3-Nitroaniline	ND	18	1700		76					
4-Nitroaniline	ND	22	1700							
Nitrobenzene	ND	16	330							
2-Nitrophenol	ND	14	330	**	-					
4-Nitrophenol	ND	23	1700				0.00			
N-Nitrosodimethylamine	ND	16	330					2		
N-Nitrosodiphenylamine	ND	17	330	0.00						
N-Nitrosodi-n-propylamine	ND	15	330			**				
Pentachlorophenol	ND	12	1700							
henanthrene	ND	14	330			11:			-	
Phenol	ND	12	330							
Pyrene	ND	12	330							
,2,4-Trichlorobenzene	ND	15	330						- "	
2,4,5-Trichlorophenol	ND	14	330							
.4,6-Trichlorophenol	ND	9.4	330	н						
Surrogate: 2-Fluorophenol	1,10	50 %	11-120							
Surrogate: Phenol-d6		69 %	16-130			_				
Surrogate: Nitrobenzene-d5		42 %	16-120			2		**		
Surrogate: 2-Fluorobiphenyl		42 %	30033			,				
Surrogate: 2,4,6-Tribromophenol		83 %	28-134			"		*		
urrogate: Terphenyl-d14			51-144			2	020		da .	
arrogate, respiretty-ury		111 %	64-115			- "		**		

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Page 10 of 42

ERM/Aerojet Data Validation Reports LDC# 0310-02A3 through 0310-02D3

Polychlorinated Biphenyls



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 14, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Polychlorinated Biphenyls

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307257

Sample Identification

11D-SNS10

11D-SNS11

11D-SNS24

P307257 PCBs

1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies (COCs) were reviewed for documentation of cooler temperatures. All cooler temperature criteria were met.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

A laboratory control sample was analyzed in duplicate in lieu of MS/MSD.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within OC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

XIV. Field Duplicates

There were no samples identified as field duplicates in this SDG. Therefore, this parameter was not evaluated.

XV. Field Blanks

There were no samples identified as field blanks in this SDG. Therefore, this parameter was not evaluated.

Aerojet RI/FS Polychlorinated Biphenyls - Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

Aerojet RI/FS

Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

P307257 Reported: 08/19/03 12:17

Polychlorinated Biphenyls by EPA Method 8082 Sequoia Analytical - Petaluma

Analyte	Result MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11D-SNS10 (P307257-13) Soil	Sampled: 07/14/03 12:55	Received: (7/15/03 1	1:08					C-01, C-06
PCB-1016	ND	33	ug/kg	1	3070322	07/17/03	07/17/03	EPA 8082	
PCB-1221	ND	33				*		*	
PCB-1232	ND	33	2.00		*	. #			
PCB-1242	ND	33	S#61			0.00		*	
PCB-1248	ND	33	(10)	7.	*				
PCB-1254	ND	33							
PCB-1260	150	33	*		*			*	
Surrogate: Decachlorobiphenyl	55 %	46-1	5		н		07/17/03	77#3	
11D-SNS11 (P307257-14) Soil	Sampled: 07/14/03 13:00	Received: (7/15/03 1	1:08					C-01, C-06
PCB-1016	ND	33	ug/kg	1	3070322	07/17/03	07/17/03	EPA 8082	
PCB-1221	ND	33			"				
PCB-1232	ND	33		- 1	W.	5.40			
PCB-1242	ND	33		W		. #	*		
PCB-1248	ND	33	0.90	.0	76.	0.46	*		
PCB-1254	ND	33	(50)	78					
PCB-1260	90	33	2.77			.7.5			
Surrogate: Decachlorobiphenyl	59 %	46-11	15				07/17/03	(#)	
10D-SNS24 (P307257-15) Soil	Sampled: 07/14/03 13:15	Received: (7/15/03 1	1:08					C-01, C-06
PCB-1016	ND	33	ug/kg	1	3070322	07/17/03	07/17/03	EPA 8082	
PCB-1221	ND	33	14			146			
PCB-1232	ND	33		10	*	*	*	*	
PCB-1242	ND	33				***	*	1.0	
PCB-1248	ND	33		14			*		
PCB-1254	ND	33	7.87	- 16					
PCB-1260	290	33	1.61		-	(35)	*	0.95	
Surrogate: Decachlorobiphenyl	52 %	46-1	15			iii)		, M.C.	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 24, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Polychlorinated Biphenyls

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307487

Sample Identification

10D-SNS 34

10D-SNS 31

10D-SNS 26

P307487 PCBs

1

Introduction

This data review covers three soil samples samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies (COCs) were reviewed for documentation of cooler temperatures. All cooler temperature criteria were met.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

Date	Standard	Column	Compound	%D	Associated Samples	Flag	A or P
8/1/03	ECDF0003	ECD	PCB-1221, PCB-1232, PCB-1248, PCB-1254, PCB-1242	100 (15)	10D-SNS 34	J detects, UJ nondetects	A

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits

with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
P307481-01 (None)	PCB-1260	129 (85 – 115)	152 (85 – 115)	16 (35)	None	Р

As the MS/MSD analysis was performed on a non-site parent sample, no sample data were qualified in this SDG based on this nonconformance.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID	Compound	%R (Limits)	Associated Samples	Flag	A or P
3070628-BS1	PCB-1016 PCB-1260	71 (85 – 115) 77 (85 – 115)	10D-SNS 34, 10D-SNS 31, 10D-SNS 26	J detects, UJ nondetects	A

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

XIV. Field Duplicates

There were no samples identified as field duplicates in this SDG. Therefore, this parameter was not evaluated.

XV. Field Blanks

There were no samples identified as field blanks in this SDG. Therefore, this parameter was not evaluated.

5

P307487 PCBs

Aerojet RI/FS Polychlorinated Biphenyls - Data Qualification Summary - SDG P307487

SDG	Sample	Compound	Flag	A or P	Reason
P307487	10D-SNS 34, 10D-SNS 31, 10D-SNS 26	PCB-1016 PCB-1260	J detects, UJ nondetects	A	LCS % recoveries below QC limits

Aerojet RI/FS

Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG P307487

No Sample Data Qualified in this SDG





Project: Acrojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307487 Reported: 08/13/03 16:30

Polychlorinated Biphenyls by EPA Method 8082 Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SNS 34 (P307487-04) Soil	Sampled: 07/24/03	11:55	Received:	07/24/03	16:30					C-01, C-06
PCB-1016	ND		33	ug/kg	1	3070628	07/30/03	00001005		C-01, C-00
PCB-1221	ND		33	 		5070028	07/30/03	08/01/03	EPA 8082	
PCB-1232	ND		33	- 5				100.0		
PCB-1242	ND		33					11#15		
PCB-1248	ND		33	**					*	
PCB-1254	500		33							
PCB-1260	520		33	16					-	
Surrogate: Decachlorobiphenyl		51 %	46-11	15		-				
10D-SNS 31 (P307487-05) Soil	Sampled: 07/24/03	12:00	Received:	07/24/03	16:30					C-01, C-06
PCB-1016	ND		33	ug/kg	1	3070628	07/30/03	07/31/03	EPA 8082	C-01, C-00
PCB-1221	ND		33	11		#	u // 30/03	07/31/03	EPA 8082	
PCB-1232	ND		33	10.	*					
PCB-1242	ND		33	10.	141	-				
PCB-1248	ND		33			100			*	
PCB-1254	ND		33			- 10				
PCB-1260	1200		33	н:	- 10	- 6		- 4		
Surrogate: Decachlorobiphenyl	7	1%	46-11	5				- 00		
10D-SNS 26 (P307487-06) Soil	Sampled: 07/24/03	12:10	Received:	07/24/03	16:30					C-01, C-06
PCB-1016	ND		33	ug/kg	1	3070628	07/30/03	07/31/03	EPA 8082	01,000
PCB-1221	ND		33			"	"	07/31/03	EFA 0002	
PCB-1232	ND		33				167		#	
PCB-1242	ND		33	9.0		. #			W.5	
PCB-1248	ND		33		**		741			
PCB-1254	ND		33	H11				*		
PCB-1260	490		33	9.5			(140)		141	
Surrogate: Decachlorobiphenyl	6	6%	46-11	5		-	**	-	,	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.



ERM/Aerojet Data Validation Reports LDC# 0310-02A4 through 0310-02S4

Metals



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 14 and 15, 2003

LDC Report Date: November 12, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307257

Sample Identification

 C32-SNS01
 10D-SNS24

 C32-SNS02
 10D-SNS25

 D(e)-SNS03
 10D-SNS26

 D(e)-SNS02
 10D-SNS27

 D(e)-SNS04
 10D-SNS28

 D(e)-SNS05
 5D-SNS09

 11D-SNS09
 5D-SNS07

11D-SNS08 11D-SNS06 11D-SNS05

1

Introduction

This data review covers seventeen soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
C32-SNS01MS/MSD (C32-SNS02, D(e)-SNS03, D(e)-SNS02, D(e)-SNS04, D(e)-SNS05, 11D-SNS09, 11D-SNS08,	Antimony Barium Zinc	51 (80-120) 26 (80-120) 79 (80-120)	52 (80-120) 97 (80-120) 130 (80-120)	3 (20) 16 (20) 10 (20)	J / UJ J / UJ J / UJ	A
11D-SNS06,	Antimony	51 (80-120)	52 (80-120)	3 (20)	J / UJ	A

3

P307257 METALS DOC

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
11D-SNS05,	Barium	26 (80-120)	97 (80-120)	16 (20)	J/UJ	
10D-SNS24,	Zinc	79 (80-120)	130 (80-120)	10 (20)	J/UJ	
10D-SNS25, 10D-SNS26, 10D-SNS27, 10D-SNS28, 5D-SNS09, 5D-SNS07)						

Matrix spike recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, and titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample C32-SNS01, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

P307257 METALS.DOC

5

Aerojet RI/FS Lead - Data Qualification Summary - SDG P307257

SDG	Sample	Analyte	Flag	A or P	Reason
P307257	C32-SNS01 C32-SNS02, D(e)-SNS03, D(e)-SNS04, D(e)-SNS05, 11D-SNS09, 11D-SNS06, 11D-SNS05, 10D-SNS24, 10D-SNS25, 10D-SNS25, 10D-SNS27, 10D-SNS27, 10D-SNS28, 5D-SNS09, 5D-SNS07	Antimony Barium, Zinc	J detects, UJ nondetects	A	Matrix spike/matrix spike duplicate % recoveries below control limits

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

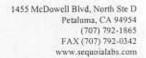




Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV Qual
C32-SNS01 (P307257-01) Soil	Sampled: 07/14/	03 09:05	Received: (7/15/03 1	1:08						Qua
Silver	ND		0.61	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	12000		44			*					
Arsenic	4.7	0.12	0.88			*	."	07/30/03	EPA 6020		
Boron	ND		8.8			*	"	07/28/03	EPA 6010B		_
Barium	160		0.88			n-		**			J
Beryllium	0.39		0.088	- 11		10	*	**			
Calcium	6500		88	14		in .	(#				
Cadmium	0.45	0.23	0.88				*	7.3		J	
Cobalt	13		0.61	3.6		1.00					
Chromium	37		0.88		50			*			
Copper	32		1.8	3.00							
Iron	21000		44								
Mercury	0.51		0.017			3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	1700		220			3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	3700		44	36	11						
Manganese	570		0.88	19	#1	*		07/29/03	1.0		
Molybdenum	ND		1.8	10	*		109	07/28/03	"		
Sodium	160		44	3,400		*			*		
Nickel	32		2.6			"		"	11		
Lead	59		0.26	11		"	14	07/30/03	EPA 6020		11.7
Antimony	ND		0.44								UJ
Selenium	0.45	0.063	0.88					07/31/03	060	- 1	45
Titanium	520		1.8		-		190	07/28/03	EPA 6010B		
	ND		0.18		*	**		07/30/03	EPA 6020		
Thallium	51		0.88			80	(*)	07/28/03	EPA 6010B		
Vanadium Zinc	150		1.8	(96)			9.50				J





Project Number: N/A
Project Manager: Bruce Lewis

P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV Que
C32-SNS02 (P307257-02) Soil	Sampled: 07/14/	03 09:20	Received: (7/15/03 1	1:08						
Silver	ND		0.60	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	13000		43	"		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	*				
Arsenic	4.2	0.12	0.86	295	*			07/30/03	EPA 6020		
Boron	ND		8.6		7			07/28/03	EPA 6010B		
Barium	150		0.86	*			"	- 10			
Beryllium	0.40		0.086	**	*			40	*		
Calcium	5000		86			274	**				
Cadmium	0.69	0.22	0.86	.0	60	. 0		. #		- 1	
Cobalt	13		0.60				: #	1000			
Chromium	64		0.86		0.7	18		6.			
Copper	38		1.7								
Iron	21000		43		-			*	*		
Mercury	0.41		0.018			3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	1900		220	"	*	3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	3800		43	-11	- 1	н		(4)			
Manganese	450		0.86			*	**	07/29/03			
Molybdenum	ND		1.7	- 10				07/28/03	(9)		
Sodium	170		43				0.8	1.0			
Nickel	30		2.6	*	5.	".					
Lead	66		0.26	1.0%		"		07/30/03	EPA 6020		
Antimony	ND		0.43		"			*			t
Selenium	0.27	0.062	0.86	**		"	-	07/31/03	*	J	
Titanium	560		1.7					07/28/03	EPA 6010B		
Thallium	ND		0.17		-	*		07/30/03	EPA 6020		
Vanadium	52		0.86	*	*	**		07/28/03	EPA 6010B		
Zinc	280		1.7	191				,			





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis

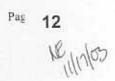
P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
D(e)-SNS03 (P307257-03) Soil	Sampled: 07/14/0	3 09:40	Received: (7/15/03	11:08					
Lead	10		0.23	mg/kg	1	3070439	07/22/03	07/30/03	EPA 6020	
D(e)-SNS02 (P307257-04) Soil	Sampled: 07/14/0	3 09:50	Received: (07/15/03	11:08					
Lead	13		0.25	mg/kg	1	3070439	07/22/03	07/30/03	EPA 6020	
D(e)-SNS04 (P307257-05) Soil	Sampled: 07/14/0	03 09:55	Received:	07/15/03	11:08					
Lead	18		0.28	mg/kg	1	3070439	07/22/03	07/30/03	EPA 6020	
D(e)-SNS05 (P307257-06) Soil	Sampled: 07/14/	03 10:05	Received:	07/15/03	11:08					
Lead	12		0.28	mg/kg	1	3070439	07/22/03	07/30/03	EPA 6020	
11D-SNS09 (P307257-07) Soil	Sampled: 07/14/0	3 10:45	Received:	07/15/03	11:08	Щ				
Silver	ND		0.62	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B	
Aluminum	16000		45	"			*	#1		
Arsenic	4.2	0.13	0.89		*	2000	"	07/30/03	EPA 6020	
Boron	ND		8.9				2.00	07/28/03	EPA 6010B	
Barium	100		0.89		**	*	*	**		
Beryllium	0.48		0.089	- 14	*	100				
Calcium	2400		89	28	".	*	7	. "		
Cadmium	2.0	0.23	0.89				*		*	
Cobalt	12		0.62				"		**	
Chromium	49		0.89				**		**	
Hexavalent Chromium	ND		0.21	1.44		3070485	07/23/03	07/24/03	EPA 7196A	
Copper	41		1.8		*	3070439	07/22/03	07/28/03	EPA 6010B	
Iron	25000		45			н	#	"		
Mercury	0.12		0.018	. # 1	36	3070336	07/28/03	07/29/03	EPA 7471A	
Potassium	2100		220			3070439	07/22/03	07/28/03	EPA 6010B	
Magnesium	4400		45	.*		"		*		
Manganese	430		4,5	5.7%	5	"		07/29/03		
Molybdenum	2.5		1.8	**	1			07/28/03	(4)	
Sodium	190		45				**	*		
Nickel	34		2.7				77.00	**	5,663	
Lead	110		0.27	н.				07/30/03	EPA 6020	
Antimony	0.98		0.45	16	- 00			*		
Selenium	0.68	0.064	0.89	н.			9.5	07/31/03	1000	1
Titanium	800		1.8		100	*		07/28/03	EPA 6010B	
Thallium	0.20		0.18		3.7	*		07/30/03	EPA 6020	
Vanadium	65		0.89			"	**	07/28/03	EPA 6010B	
Zinc	1900		1.8	*	. 10		11.			

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.







Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL.	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV
11D-SNS08 (P307257-09) Soil	Sampled: 07/14/	03 10:50	Received: (7/15/03 1	1:08						
Silver	ND		0.60	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	7100		43	7.	**				*		
Arsenie	1.8	0.12	0.86	7.		*		07/30/03	EPA 6020		
Boron	ND		8.6				**	07/28/03	EPA 6010B		J
Barium	57		0.86		100	100	**	*			0
Beryllium	0.22		0.086		*		**		"		
Calcium	1900		86								
Cadmium	0.89	0.22	0.86	. 0	11	340	100				
Cobalt	5.3		0.60			0.99	**				
Chromium	33		0.86		*				#		
Hexavalent Chromium	0.34		0.20			3070485	07/23/03	07/24/03	EPA 7196A		
Copper	25		1.7	7.7	*	3070439	07/22/03	07/28/03	EPA 6010B		J
Iron	14000		43		18			5.00	**		
Mercury	0.027		0.018	- 11		3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	980		220			3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	2600		43		*	*	#				
Manganese	170		4.3		5		16.7	07/29/03			
Molybdenum	ND		1.7	190	1	50		07/28/03			
Sodium	180		43								
Nickel	21		2.6						#		
Lead	79		0.26				*	07/30/03	EPA 6020		
Antimony	1.0		0.43			H	9.1	"			J
PLEATER AND THE STATE OF THE ST	0,38	0.062				и.		07/31/03	190	1	E.
Selenium	470	V1000	1.7					07/28/03	EPA 6010B		
Titanium	ND		0.17	(0.0			0.67	07/30/03	EPA 6020		
Thallium	34		0.86				0.90	07/28/03	EPA 6010B		
Vanadium Zine	1500		1.7		2		*	*			J





Project: Aerojet RI/FS Project Number: N/A P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	Di
11D-SNS06 (P307257-11) Soil	Sampled: 07/14/	03 12:15	Received: (7/15/03 1	1:08						Jul
Silver	ND		0.50	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	15000		36			*	*	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-		
Arsenic	2.5	0.10	0.71	**	. 0		100	07/30/03	EPA 6020		
Boron	ND		7.1	0.00				07/28/03	EPA 6010B		
Barium	79		0.71				*	*			
Beryllium	0.36		0.071				*	- 10			
Calcium	2100		71	*	*		**	1.46			
Cadmium	0.22	0.19	0.71	**		41			*	1	
Cobalt	9.7		0.50	- 10	H:		*		*		
Chromium	43		0.71	/#			**				
Hexavalent Chromium	0.23		0.21		*	3070485	07/23/03	07/24/03	EPA 7196A		
Copper	27		1.4	0.5	- 1	3070439	07/22/03	07/28/03	EPA 6010B		
Iron	18000		36	525	*						
Mercury	ND		0.015	"	**	3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	1200		180	,,		3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	3800		36			+:					
Manganese	280		3.6		5	*		07/29/03			
Molybdenum	ND		1.4		1			07/28/03	.,		
Sodium	150		36	W 1		*					
Nickel	39		2.1			"	16	"			
Lead	8.8		0.21	3973				07/30/03	EPA 6020		
Antimony	ND		0.36	-112	"	"		#	-	114	t
Selenium	0.22	0.051	0.71	**	"			07/31/03	(#)	J	
Titanium	680		1.4		**	46.		07/28/03	EPA 6010B		
Thallium	ND		0.14			*		07/30/03	EPA 6020		
Vanadium	46		0.71		*	11		07/28/03	EPA 6010B		
Zinc	210		1.4	- 0	96	16		"			





Project: Aerojet RI/FS Project Number: N/A P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11D-SNS05 (P307257-12) Soil	Sampled: 07/14/	03 12:30	Received: (7/15/03 1	1:08					
Silver	ND		0.50	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B	
Aluminum	16000		36		*		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	*	*	
Arsenic	2.9	0.10	0.71		8.5	**	,,,	07/30/03	EPA 6020	
Boron	ND		7.1					07/28/03	EPA 6010B	
Barium	100		0.71	"		**		*		
Beryllium	0.46		0.071	"		11		1400		
Calcium	1900		71			**	**	(4.7)		
Cadmium	ND	0.19	0.71		# 1		**		*	
Cobalt	13		0.50							
Chromium	53		0.71		*	*		N#1		
Hexavalent Chromium	0.60		0.21	2.0	*	3070485	07/23/03	07/24/03	EPA 7196A	
Copper	29		1.4	27		3070439	07/22/03	07/28/03	EPA 6010B	
Iron	24000		36	."			DATE DO DO DO		the state of the second of the	
Mercury	0.051		0.016	,,	"	3070336	07/28/03	07/29/03	EPA 7471A	
Potassium	1700		180			3070439	07/22/03	07/28/03	EPA 6010B	
Magnesium	3800		36						*	
Manganese	500		3.6		5			07/29/03		
Molybdenum	ND		1.4		1	#6		07/28/03		
Sodium	130		36		*	"		"		
Nickel	42		2.1	(90)			**			
Lead	7.9		0.21	183			**	07/30/03	EPA 6020	
Antimony	ND		0.36			*		#		
Selenium	0.37	0.051	0.71					07/31/03		1
Titanium	750		1.4			н.		07/28/03	EPA 6010B	
Thallium	0.14		0.14		96	**.		07/30/03	EPA 6020	
Vanadium	62		0.71	#	*	*	1.9	07/28/03	EPA 6010B	
Zine	68		1.4		.*		536	*	100	





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SNS24 (P307257-15) Soil	Sampled: 07/14/0	03 13:15	Received:	07/15/03 1	1:08					
Silver	ND		0.56	mg/kg	- 1	3070439	07/22/03	07/28/03	EPA 6010B	
Aluminum	8600		40	*					"	
Arsenic	3.2	0.11	0.81		*	*		08/01/03	EPA 6020	
Boron	ND		8.1					07/28/03	EPA 6010B	
Barium	63		0.81	*	**	*	*	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Beryllium	0.27		0.081	"					*	
Calcium	2800		81		10		**		*	
Cadmium	1.7	0.21	0.81	44			#	- 39		
Cobalt	6.6		0.56	H			.10	1.99		
Chromium	33		0.81	96	3.90	(#5)				
Hexavalent Chromium	ND		2.1		10	3070485	07/23/03	07/24/03	EPA 7196A	R-01
Copper	48		1.6		1	3070439	07/22/03	07/28/03	EPA 6010B	
Iron	23000		40	*	*		"	- *	**	
Mercury	0.042		0.018			3070336	07/28/03	07/29/03	EPA 7471A	
Potassium	1000		200	u		3070439	07/22/03	07/28/03	EPA 6010B	
Magnesium	2900		40		11.					
Manganese	220		4.0	**	5			07/29/03		
Molybdenum	1.8		1.6		1		."	07/28/03		
Sodium	200		40			17.				
Nickel	24		2.4	522		"				
Lead	40		0.40			"		07/31/03	EPA 6020	
Antimony	0.55		0.40	**	"	u.		07/30/03	-	
Selenium	0.46	0.058	0.81				*	07/31/03	7.0	1
Titanium	450		1.6	-	*			07/28/03	EPA 6010B	
Thallium	ND		0.16			*	(4)	07/31/03	EPA 6020	
Vanadium	41		0.81			100		07/28/03	EPA 6010B	
Zinc	1500		1.6			2.5		70	7.1	





Project: Aerojet RI/FS Project Number: N/A P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV
10D-SNS25 (P307257-16) Soil	Sampled: 07/14/0	03 13:20	Received: (7/15/03 1	1:08						000
Silver	ND		0.53	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	22000		38		*						
Arsenic	7.9	0.11	0.76	77		(*)	"	07/30/03	EPA 6020		
Boron	ND		7.6	*			"	07/28/03	EPA 6010B		-
Barium	180		0.76	*		*					J
Beryllium	0.59		0.076					**	-		
Calcium	3600		76	11	10	10	. 11	16			
Cadmium	1.7	0.20	0.76	- 1	*	*	**				
Cobalt	19		0.53					181			
Chromium	66		0.76				75	(20)			110
Hexavalent Chromium	ND		0.20	- 11	9.7	3070485	07/23/03	07/24/03	EPA 7196A		UJ
Copper	58		1.5			3070439	07/22/03	07/28/03	EPA 6010B		
Iron	34000		38	. "	"	*	*	(8)			
Mercury	0.076		0.017	"	*	3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	1700		190			3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	6000		38								
Manganese	850		3.8		5			07/29/03			
Molybdenum	2.0		1.5		1	#		07/28/03	2.72		
Sodium	240		38								
Nickel	51		2.3	1.8			571		TORSE SANGERS		
Lead	33		0.23	28	*	7.	7	07/30/03	EPA 6020		-
Antimony	0.44		0.38					#.	*		J
Selenium	0.22	0.055	0.76	*				07/31/03		J	
Titanium	770		1.5	*				07/28/03	EPA 6010B		
Thallium	0.17		0.15				**	07/30/03	EPA 6020		
Vanadium	87		0.76			*	. 10	07/28/03	EPA 6010B		-7
Zinc	1000		1.5			*	7/27				1





Project: Aerojet RI/FS Project Number: N/A P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

ND	Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	Qual
Aluminum 17000 40 " " " " " " " " " Arsenic 8.7 0.11 0.81 " " " 07/30/03 EPA 6020 Boron ND 8.1 " " " 07/28/03 EPA 6010B Barium 120 0.81 " " " " " " " " " " " " " " " " " " "	10D-SNS26 (P307257-17) Soil	Sampled: 07/14/	03 13:30	Received:	07/15/03 1	11:08						ucon
Aluminum 17000	Silver	ND		0.56	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Boron ND	Aluminum	17000		40						*		
Barium 120	Arsenic	8.7	0.11	0.81				*	07/30/03	EPA 6020		
Beryllium	Boron	ND		8.1				*	07/28/03	EPA 6010B		
Calcium 3500 81 " " " " " " " " " " " " " " " " " " "	Barium	120		0.81			17.1					J
Cadmium 1.4 0.21 0.81 0.56 0.81 0.56 0.81 0.81 0.70 0.81 0.81 0.81 0.81 0.81 0.81 0.81 0.8	Beryllium	0.47		0.081								
Cobalt	Calcium	3500		81								
Chromium 56 0.81 " " " " " " " " " " " " " " " " " " "	Cadmium	1.4	0.21	0.81	*		# 1	ii.	*			
Hexavalent Chromium	Cobalt	14		0.56	96		*	*	\iii	**		
Copper	Chromium	56		0.81	-91			100		**		
Copper	Hexavalent Chromium	ND		0.21	*		3070485	07/23/03	07/24/03	EPA 7196A		UJ
Iron 27000 40	Copper	45		1.6	W.		3070439	07/22/03	07/28/03	EPA 6010B		W. British
Potassium 2000 200 " 3070439 07/22/03 07/28/03 EPA 6010B		27000		40		1.61			,,			
Potassium 2000 200 " 3070439 07/22/03 07/28/03 EPA 6010B	Mercury	0.067		0.019		**	3070336	07/28/03	07/29/03	EPA 7471A		
Magnesium 5300 40 " " " " " " " " " " " " " " " " " " "	Potassium	2000		200		*	3070439	07/22/03	07/28/03	EPA 6010B		
Manganese 490 4.0 " 5 " 07/29/03 " Molybdenum ND 1.6 " 1 " 07/28/03 " Sodium 340 40 " " " " " Nickel 36 2.4 " " " " " Lead 34 0.24 " " " 07/30/03 EPA 6020 Antimony 0.49 0.40 " <		5300		40	10			-		*		
Molybdenum ND 1.6 " I " <		490		4.0	in .	5			07/29/03	-		
Sodium 340 40 " " " " " " " " " " "		ND		1.6	W	1		-	07/28/03	*		
Lead 34 0.24 " " " 07/30/03 EPA 6020 Antimony 0.49 0.40 " " " " 07/31/03 "] Selenium 0.41 0.058 0.81 " " 07/31/03 "] Titanium 740 1.6 " " 07/38/03 EPA 6010B Thallium 0.19 0.16 " " 07/30/03 EPA 6020 Vanadium 71 0.81 " " 07/28/03 EPA 6010B		340		40	.00		10.	-		100		
Antimony 0.49 0.40 " " " " " " " " " " " " " " " " " " "	Nickel	36		2.4		10.0	0.5		- 99	-		
Selenium	Lead	34		0.24					07/30/03	EPA 6020		
Selenium 0.41 0.058 0.81 " " " " 07/31/03 " 1 Titanium 740 1.6 " " " 07/28/03 EPA 6010B Thallium 0.19 0.16 " " 07/30/03 EPA 6020 Vanadium 71 0.81 " " 07/28/03 EPA 6010B	Antimony	0.49		0.40	"	**	11	*	"			J
Titanium 740 1.6 " " " 07/28/03 EPA 6010B Thallium 0.19 0.16 " " 07/30/03 EPA 6020 Vanadium 71 0.81 " " 07/28/03 EPA 6010B	3000 D	0.41	0.058	0.81			*		07/31/03	1 201	1	
Thallium 0.19 0.16 " " " 07/30/03 EPA 6020 Vanadium 71 0.81 " " 07/28/03 EPA 6010B	Charles and the second		10.00		"	,,		**	07/28/03	EPA 6010B		
Vanadium 71 0.81 " " " 07/28/03 EPA 6010B						200				EPA 6020		
					W	(4)		**		EPA 6010B		
Zinc 980 1.0	Zinc	980		1.6			-			*		J





Project: Aerojet RI/FS Project Number: N/A P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV
10D-SNS27 (P307257-18) Soil	Sampled: 07/14/03	13:40	Received: (07/15/03 1	1:08						Qual
Silver	ND		0.67	mg/kg	- 4	3070439	07/22/03	07/28/03	EPA 6010B		_
Aluminum	25000		48				**				
Arsenic	7.0	0.14	0.96					07/30/03	EPA 6020		
Boron	ND		9.6	16	16	*	"	07/28/03	EPA 6010B		
Barium	250		0.96		9.0		#1				J
Beryllium	0.82		0.096	*	7.00	1.0					53770
Calcium	4100		96	7.							
Cadmium	1.7	0.25	0.96		*						
Cobalt	27		0.67	*	10		"		*		
Chromium	87		0.96	*	- 11	**	46		**		
Hexavalent Chromium	ND		0.21	**	-	3070485	07/23/03	07/24/03	EPA 7196A		WJ
Copper	66		1.9		160	3070439	07/22/03	07/28/03	EPA 6010B		19 CM
Iron	42000		48	H.			#.				
Mercury	0.18		0.016		199	3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	2300		240	75		3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	6800		48				"		*		
Manganese	1000		4.8	,,	5	*		07/29/03			
Molybdenum	2.6		1.9	*	1	*	**	07/28/03			
Sodium	220		48		*	**	**	- 11			
Nickel	65		2.9				ii)		90		
Lead	51		0.29	*	ü	. 44	**	07/30/03	EPA 6020		
Antimony	ND		0.48	*	19		*		#		U
Selenium	0.45	0.069	0.96	#3	177	39	75	07/31/03		J	
Titanium	960		1.9		1.7		70	07/28/03	EPA 6010B		
Thallium	0.20		0.19				*	07/30/03	EPA 6020		
Vanadium	110		0.96				11	07/28/03	EPA 6010B		
Zinc	1100		1.9					**			T

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.







Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV.
10D-SNS28 (P307257-19) Soil	Sampled: 07/14	/03 13:50	Received:	7/15/03 1	1:08						Qual
Silver	17		0.45	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	23000		32	*			**		11		
Arsenic	6.6	0.091	0.64	*			*	07/30/03	EPA 6020		
Boron	ND		6.4	4			#1	07/28/03	EPA 6010B		
Barium	180		0.64			3.8	#3		"		J
Beryllium	0.70		0.064	*	2.0	17					
Calcium	3700		64				"				
Cadmium	2.2	0.17	0.64	*			"				
Cobalt	20		0.45		100		**		**		
Chromium	83		0.64			*		*	40		
Hexavalent Chromium	ND		0.20	*	(4)	3070485	07/23/03	07/24/03	EPA 7196A		W
Copper	60		1.3		147	3070439	07/22/03	07/28/03	EPA 6010B		
Iron	37000		32				**				
Mercury	0.57		0.018		577	3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	1900		160			3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	6000		32			-	"	*			
Manganese	760		3.2	*	5		**	07/29/03	**		
Molybdenum	2.5		1.3		-1	16		07/28/03			
Sodium	200		32			100	**				
Nickel	57		1.9				0.5				
Lead	39		0.19			18		07/30/03	EPA 6020		
Antimony	ND		0.32			17	20	*			W
Selenium	0.36	0.046	0.64	7.			"	07/31/03		J	
Titanium	740		1.3		*			07/28/03	EPA 6010B		
Thallium	0.14		0.13	*			**	07/30/03	EPA 6020		
Vanadium	97		0.64			14	**	07/28/03	EPA 6010B		42.2
Zinc	770		1.3	*		10			"		J





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV Gual
5D-SNS09 (P307257-20) Soil	Sampled: 07/15/0	3 09:00	Received: 07	7/15/03 11	:08						Charles
Silver	ND		0.47	mg/kg	1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	24000		33		90			*			
Arsenic	9.3	0.095	0.67	90		.10	6	07/30/03	EPA 6020		
Boron	ND		6.7	90	777		**	07/28/03	EPA 6010B		
Barium	240		0.67	*			*		*		J
Beryllium	0.93		0.067	*	7						
Calcium	6000		67				*				
Cadmium	0.49	0.17	0.67			**	#			3	
Cobalt	18		0.47	**			**				
Chromium	51		0.67	"	38			**			
Hexavalent Chromium	ND		0.20		- 10	3070485	07/23/03	07/24/03	EPA 7196A		UJ
Copper	48		1.3	90)		3070439	07/22/03	07/28/03	EPA 6010B		
Iron	35000		33	95	- 22		*	,	10-10-10-10-10-10-10-10-10-10-10-10-10-1		
Mercury	0.083		0.017		7.9	3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	1900		170	- "		3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	6500		33	#	7.0	"		**	+		
Manganese	1000		3.3		5			07/29/03			
Molybdenum	1.7		1.3	0	1	н	*	07/28/03	*		
Sodium	640		33	9		70					
Nickel	46		2.0	H	-#	50	*:	.00			
Lead	65		0.20	0.7	1.0	-#	*	07/30/03	EPA 6020		
Antimony	0.40		0.33	10	109	.0	40				J
Selenium	0.087	0.048	0.67		1.5		-	08/01/03	7.	1	
Titanium	800		1.3		*	.,	-	07/28/03	EPA 6010B		
Thallium	0.16		0.13	**			**	07/30/03	EPA 6020		
Vanadium	89		0.67	H	79	70	#	07/28/03	EPA 6010B		
Zinc	150		1.3		- 54		# .				J

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.







Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P307257 Reported: 08/19/03 12:17

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV
5D-SNS07 (P307257-22) Soil	Sampled: 07/15/03	Received: 07	7/15/03 11						aud		
Silver	40		0.67	mg/kg	- 1	3070439	07/22/03	07/28/03	EPA 6010B		
Aluminum	24000		48	"			*	"	=		
Arsenic	12	0.14	0.96	*	(#	- 14		07/30/03	EPA 6020		
Boron	ND		9.6	20	1,9	.0	*	07/28/03	EPA 6010B		
Barium	180		0.96	11	28				#		J
Beryllium	0.74		0.096	**	7	.,,					9
Calcium	4200		96								
Cadmium	2.2	0.25	0.96	*							
Cobalt	20		0.67	*		- 11					
Chromium	130		0.96			100					
Hexavalent Chromium	ND		1.0		5	3070485	07/23/03	07/24/03	EPA 7196A	R-01	UJ
Copper	110		1.9		1	3070439	07/22/03	07/28/03	EPA 6010B	15-93	0,0
Iron	38000		48	+				*	7		
Mercury	0.75		0.17		10	3070336	07/28/03	07/29/03	EPA 7471A		
Potassium	2400		240		1	3070439	07/22/03	07/28/03	EPA 6010B		
Magnesium	6200		48		**	#	H	#	*		
Manganese	730		4.8	#6	5	W		07/29/03			
Molybdenum	3.7		1.9	0.7	1	*	*	07/28/03			
Sodium	260		48	- 6.5		*		"			
Nickel	62		2.9	(6)							
Lead	92		0.29	100				07/30/03	EPA 6020		
Antimony	ND		0.48	0.5	78	28	1960	"	Ed is true!		UJ
Selenium	0.52	0.069	0.96					07/31/03		1	-
Titanium	810		1.9					07/28/03	EPA 6010B		
Thallium	0.19		0.19				4	07/30/03	EPA 6020		
Vanadium	98		0.96	40	100			07/28/03	EPA 6010B		
Zinc	540		1.9		1.0		4.	"	*		T

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 15, 2003

LDC Report Date: November 12, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307335

Sample Identification

C15-SS07

C15-SS06

C15-SS05

C15-SS08

A20-BML01

A20-BML03

Introduction

This data review covers six soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, 7470A and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
Antimony Arsenic Barium Chromium Mercury Nickel Selenium	37 (80-120) 81 (80-120) 143 (80-120) 125 (80-120) 72 (80-120) 125 (80-120) 75 (80-120)	35 (80-120) 78 (80-120) 148 (80-120) 121 (80-120) 81 (80-120) 125 (80-120) 73 (80-120)	2 (20) 0.2 (20) 2 (20) 0 (20) 1 (20) 2 (20) 0.9 (20)	J/UJ J/UJ J detects J detects J/UJ J detects J/UJ J detects	A
	Antimony Arsenic Barium Chromium Mercury Nickel	Analyte (Limits) Antimony 37 (80-120) Arsenic 81 (80-120) Barium 143 (80-120) Chromium 125 (80-120) Mercury 72 (80-120) Nickel 125 (80-120)	Analyte(Limits)(Limits)Antimony37 (80-120)35 (80-120)Arsenic81 (80-120)78 (80-120)Barium143 (80-120)148 (80-120)Chromium125 (80-120)121 (80-120)Mercury72 (80-120)81 (80-120)Nickel125 (80-120)125 (80-120)	Analyte (Limits) (Limits) (Limits) Antimony 37 (80-120) 35 (80-120) 2 (20) Arsenic 81 (80-120) 78 (80-120) 0.2 (20) Barium 143 (80-120) 148 (80-120) 2 (20) Chromium 125 (80-120) 121 (80-120) 0 (20) Mercury 72 (80-120) 81 (80-120) 1 (20) Nickel 125 (80-120) 125 (80-120) 2 (20)	Analyte (Limits) (Limits) (Limits) Flag Antimony 37 (80-120) 35 (80-120) 2 (20) J / UJ Arsenic 81 (80-120) 78 (80-120) 0.2 (20) J / UJ Barium 143 (80-120) 148 (80-120) 2 (20) J detects Chromium 125 (80-120) 121 (80-120) 0 (20) J detects Mercury 72 (80-120) 81 (80-120) 1 (20) J / UJ Nickel 125 (80-120) 125 (80-120) 2 (20) J detects

3

P307335 METALS DOC

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
C15-SS07MS/MSD	Silver	67 (80-120)	67 (80-120)	3 (20)	J/UJ	A
(C15-SS06,	Zinc	110 (80-120)	131 (80-120)	9 (20)	J detects	
C15-SS05,						
C15-SS08,						
A20-BML01,						
A20-BML03)						

Matrix spike recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, and titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample C15-SS07, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks.	Therefore this parameter was not evaluated
No samples in the SDG were identified as field blanks.	Therefore, this parameter was not evaluated

P307335 METALS.DOC 5

Aerojet RI/FS Lead - Data Qualification Summary - SDG P307335

SDG	Sample	Analyte	Flag	A or P	Reason
P307335	C15-SS07, C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03	Antimony, Arsenic, Mercury, Selenium, Silver	J detects, UJ nondetects	A	Matrix spike/matrix spike duplicate % recoveries below control limits
P307335	C15-SS07, C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03	Barium, Chromium, Nickel, Zinc	J detects	A	Matrix spike/matrix spike duplicate % recoveries above control limits

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P307335

No Sample Data Qualified in this SDG

6

P307335 METALS.DOC





Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis P307335 Reported: 08/19/03 12:04

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV
C15-SS07 (P307335-01) Soil	Sampled: 07/15/0	3 11:20 R	eceived: 07	/16/03 14	:25						Qual
Silver	ND		0.60	mg/kg	1	3070440	07/24/03	07/28/03	EPA 6010B		W
Aluminum	29000		43				**	W			
Arsenic	7.5	0.12	0.86					08/01/03	EPA 6020		J
Boron	ND		8.6		*		7.97	07/28/03	EPA 6010B		
Barium	250		0.86	**	*	*	*				J
Beryllium	0.92		0.086		"	,			()		
Calcium	3300		86						*		
Cadmium	0.32	0.22	0.86		**	.0	*		-	J	
Cobalt	24		0.60		- 1	"	- 1	*	14		
Chromium	81		0.86	#	**		(# 1	и.			J
Hexavalent Chromium	ND		0.21	60		3070631	07/30/03	07/31/03	EPA 7196A		UJ
Copper	58		1.7	#.	**	3070440	07/24/03	07/28/03	EPA 6010B		
Iron	41000		43	160		*		07/29/03			
Mercury	0.079		0.019	5.5		3070398	07/28/03	07/29/03	EPA 7471A		J
Potassium	2800		220	70	17	3070440	07/24/03	07/28/03	EPA 6010B		
Magnesium	6800		43						"		
Manganese	1000		0.86					07/29/03	W.		
Molybdenum	ND		1.7					07/28/03	**		
Sodium	180		43	*				*			-
Nickel	60		2.6	*				*	H.:		J
Lead	20		0.43	*			*	07/30/03	EPA 6020		-
Antimony	0.43		0.43	**			10		***************************************		7
Selenium	0.30	0.062	0.86	97	5.99	95		08/01/03	**	J	J
Titanium	970		1.7	150	. "	- 0		07/29/03	EPA 6010B		
Thallium	0.20		0.17					07/30/03	EPA 6020		
Vanadium	110		0.86		,,	**	*	07/28/03	EPA 6010B		
Zinc	82		1.7		**		**				J





Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis P307335 Reported: 08/19/03 12:04

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes DV
C15-SS06 (P307335-02) Soil	Sampled: 07/15/0	3 11:45 R	eceived: 07	/16/03 14	:25					Que
Silver	ND		0.60	mg/kg	1	3070440	07/24/03	07/28/03	EPA 6010B	- u
Aluminum	26000		43			**	*	**	**	ч
Arsenic	6.0	0.12	0.86	*			#1	08/01/03	EPA 6020	3
Boron	ND		8.6	+0.	71		*	07/28/03	EPA 6010B	
Barium	270		0.86			19	*		*	
Beryllium	0.89		0.086				*		100	
Calcium	2800		86		17	177	7.		19	
Cadmium	0.67	0.22	0.86	*		*		*	**	I
Cobalt	13		0.60	*	-				+	
Chromium	880		0.86	*	ės.	it			0	
Hexavalent Chromium	ND		0.21	*	198	3070631	07/30/03	07/31/03	EPA 7196A	u
Copper	240		1.7		- 1	3070440	07/24/03	07/28/03	EPA 6010B	
Iron	40000		220		5	#	*	07/29/03	10	
Mercury	0.062		0.020	*	1	3070398	07/28/03	07/29/03	EPA 7471A	J
Potassium	3200		220	#0		3070440	07/24/03	07/28/03	EPA 6010B	1171
Magnesium	6100		43		1.0			"		
Manganese	450		4.3		5	"		07/29/03		
Molybdenum	2.4		1.7		1	"	*	07/28/03		
Sodium	190		43			**	**	**		
Nickel	53		2.6	**	ii ii	ii ii	**		*	
Lead	39		0.43		- 94		# + 1	07/30/03	EPA 6020	
Antimony	0.66		0.43	100		- 10	0.0		#	2
Selenium	0.49	0.062	0.86	*			#1	08/01/03	*	J
Titanium	960		8.6		5	725	25	07/29/03	EPA 6010B	
Thallium	0.18		0.17	*	31			07/30/03	EPA 6020	
Vanadium	100		0.86				**	07/28/03	EPA 6010B	
Zinc	270		1.7	*					"	





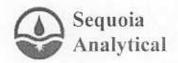
Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis P307335 Reported: 08/19/03 12:04

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV
C15-SS05 (P307335-03) Soil	Sampled: 07/15/0	3 12:00 R	eceived: 07	/16/03 14	:25						quo
Silver	ND		0.65	mg/kg	1	3070440	07/24/03	07/28/03	EPA 6010B		U.
Aluminum	25000		46				- 10		140		
Arsenic	5.9	0.13	0.93	*		*		08/01/03	EPA 6020		J
Boron	ND		9.3		*		(/46)/	07/28/03	EPA 6010B		_
Barium	250		0.93	96		96	5.00	**			3
Beryllium	0.76		0.093	196		311	(.9)	*	1.60		
Calcium	3900		93			78	(14)	*	(1997)		
Cadmium	1.1	0.24	0.93	7.	- 2		100	"			
Cobalt	18		0.65						**		
Chromium	100		0.93					*	46		J
Hexavalent Chromium	ND		1.0		5	3070631	07/30/03	07/31/03	EPA 7196A	R-01	u
Copper	62		1.9	**	1	3070440	07/24/03	07/28/03	EPA 6010B		
Iron	38000		230		5	.11		07/29/03	(10)		
Mercury	0.077		0.018	0.5	1	3070398	07/28/03	07/29/03	EPA 7471A		7
Potassium	3400		230			3070440	07/24/03	07/28/03	EPA 6010B		-
Magnesium	6100		46	80	(8)						
Manganese	770		4.6		5	21		07/29/03	1.7		
Molybdenum	ND		1.9		1			07/28/03			
Sodium	220		46			**	*				
Nickel	51		2.8			**					J
Lead	41		0.46			**	16	07/30/03	EPA 6020		-
Antimony	ND		0.46	100			96	#.			UJ
Selenium	0.072	0.067	0.93	10.				08/01/03	100	1	J
Titanium	980		9.3	100	5	96		07/29/03	EPA 6010B		-
Thallium	ND		0.19	+:	1		H)	07/30/03	EPA 6020		
Vanadium	88		0.93				*	07/28/03	EPA 6010B		
Zinc	240		1.9						11.7		J

The results in this report apply to the samples analyzed in accordance with the chain of





Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P307335 Reported: 08/19/03 12:04

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV.
C15-SS08 (P307335-04) Soil	Sampled: 07/15/0	3 13:20 F	Received: 07	/16/03 14	:25						Qual.
Silver	ND		0.56	mg/kg	1	3070440	07/24/03	07/28/03	EPA 6010B		UJ
Aluminum	32000		40						H .		
Arsenic	6.5	0.11	0.79				16	08/01/03	EPA 6020		J
Boron	ND		7.9	*				07/28/03	EPA 6010B		
Barium	230		0.79	*	17				"		J
Beryllium	0.99		0.079	*0	(#			8.			
Calcium	3500		79		17			- "			
Cadmium	0.72	0.21	0.79	"				*		J	
Cobalt	24		0.56	"	.11	**			-		
Chromium	78		0.79		/44				*		工
Hexavalent Chromium	ND		0.21		11	3070631	07/30/03	07/31/03	EPA 7196A		W
Copper	57		1.6	*		3070440	07/24/03	07/28/03	EPA 6010B		
Iron	46000		200	*	5	=#1	#	07/29/03	*.		
Mercury	0.088		0.015	*:	1	3070398	07/28/03	07/29/03	EPA 7471A		J
Potassium	3600		200			3070440	07/24/03	07/28/03	EPA 6010B		
Magnesium	6700		40		200		*		*		
Manganese	990		4.0		5			07/29/03			
Molybdenum	1.6		1.6		1	9	**	07/28/03			
Sodium	180		40	*	- 10		W.		*		-12
Nickel	57		2.4				W.		*		J
Lead	26		0.40		*	- 40	0.	07/30/03	EPA 6020		
Antimony	0.46		0.40	-			.#6	*	"		J
Selenium	0.14	0.057	0.79			(40)		08/01/03		3	I
Titanium	950		7.9	7	5			07/29/03	EPA 6010B		
Thallium	ND		0.16	**	1			07/30/03	EPA 6020		
Vanadium	110		0.79		#		*	07/28/03	EPA 6010B		_
Zinc	97		1.6						**		J





Project Number: RI-FS
Project Number: Bruce Lewis

P307335 Reported: 08/19/03 12:04

Analyte	Result	MDL.	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV
A20-BML01 (P307335-10) Soil	Sampled: 07/1	6/03 10:20	Received:	07/16/03	14:25						Qual-
Silver	ND		0.56	mg/kg	1	3070440	07/24/03	07/28/03	EPA 6010B		UJ
Aluminum	18000		40		78	76	-		100		-
Arsenic	5.3	0.11	0.81	10.0	**	ж		08/01/03	EPA 6020		J
Boron	ND		8.1			W	W.	07/28/03	EPA 6010B		
Barium	150		0.81			*	н.	*			J
Beryllium	0.46		0.081	"							
Calcium	3100		81	15		н	*	*			
Cadmium	ND	0.21	0.81	7	"	*					
Cobalt	13		0.56	*	,,		*	*			
Chromium	46		0.81	*			W				J
Hexavalent Chromium	0.27		0.21		-	3070631	07/30/03	07/31/03	EPA 7196A		WT
Copper	38		1.6			3070440	07/24/03	07/28/03	EPA 6010B		150
Iron	29000		200	*	5		#:	07/29/03			
Mercury	0.097		0.016	*	1	3070398	07/28/03	07/29/03	EPA 7471A		J
Potassium	1500		200	10		3070440	07/24/03	07/28/03	EPA 6010B		100
Magnesium	4700		40	90	199		*	"	**		
Manganese	550		4.0	90	5	"	7.	07/29/03	"		
Molybdenum	ND		1.6	"	- 1			07/28/03	15		
Sodium	280		40			"			-		
Nickel	42		2.4					11	-		J
Lead	5.9		0.40					07/31/03	EPA 6020		92.
Antimony	ND		0.40		70		61	.11			UJ
Selenium	ND	0.058	0.81	10			*	08/01/03			UJ
Titanium	840		8.1		5			07/29/03	EPA 6010B		
Thallium	ND		0.16	*	1	28	70	07/31/03	EPA 6020		
Vanadium	73		0.81			-		07/28/03	EPA 6010B		-
Zinc	51		1.6					*			J





Project: Aerojet RI/FS

Project Number: RI-FS Project Manager: Bruce Lewis P307335 Reported: 08/19/03 12:04

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	W
A20-BML03 (P307335-13) Soil	Sampled: 07/16/03 12:00		Received:	ceived: 07/16/03 14:25							aud
Silver	ND		0.61	mg/kg	Ť.	3070440	07/24/03	07/28/03	EPA 6010B		UJ
Aluminum	17000		44	"		"	# P	07/20/03	EPA 0010B		0.5
Arsenic	3.1	0.12	0.88	(90)	*	W.		08/01/03	EPA 6020		I
Boron	ND		8.8	150			200	07/28/03	EPA 6010B		-1
Barium	130		0.88				1.00	W//A0/03	EFA 0010B		
Beryllium	0.51		0.088								J
Calcium	3000		88			n					
Cadmium	0.25	0.23	0.88								
Cobalt	13		0.61							,	
Chromium	46		0.88	194	44	60					T
Hexavalent Chromium	0.68		0.52		2.5	3070631	07/30/03	07/31/03	EPA 7196A		7
Copper	29		1.8		1	3070440	07/24/03	07/28/03	EPA 6010B		J
Iron	27000		220	-	5	30,0440	11	07/29/03	EFA 00/10B		
Mercury	0.045		0.018		12	3070398	07/28/03	07/29/03	EPA 7471A		J
Potassium	1800		220		į.	3070440	07/24/03	07/28/03	EPA 6010B		_
Magnesium	4100		44			#	*	07/20/03	EFA 0010B		
Manganese	520		4.4	, ir	5			07/29/03			
Molybdenum	ND		1.8		1			07/28/03			
Sodium	170		44				-	#			
Nickel	37		2.6			2.40	-	740			7
Lead	6.3		0.44				216	07/31/03	EPA 6020		
Antimony	ND		0.44					17731743	EFA 0020		UT
Selenium	ND	0.063	0.88		**			08/01/03			10 may 20 mg 10 mg
ritanium =	880		8.8		5			07/29/03	EDA KOLOD		LU
Thallium	ND		0.18		1		-	07/29/03	EPA 6010B		
Vanadium	65		0.88	11		10		07/28/03	EPA 6020 EPA 6010B		
Line	44		1.8		200		-	07/28/03	EFA 6010B		T

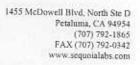




Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P307335 Reported: 08/19/03 12:04

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
A20-BML01 (P307335-10) Soil	Sampled: 07/16/03 10:20		Received:	07/16/03	14:25					
Silver	ND		0.035	mg/l	- 1	3070448	07/30/03	07/30/03	EPA 6010B	
Aluminum	37		1.0		*			07/30/03	"	
Arsenie	ND		0.50	*	- 10	96	(ii)	07/30/03		
Boron	ND		0.50	0.00				07/30/03		
Barium	11		0.050	1.00	29.		1.97	#)	**	
Beryllium	0.0074		0.0050	0.00			2.83		100	
Calcium	200		5.0	**		"			194.5	
Cadmium	ND		0.050							
Cobalt	0.70		0.035							
Chromium	0.083		0.050						in .	
Copper	0.59		0.050	16		W		w.	10	
Iron	78		1.5	1.00	(#	.11		11	240	
Mercury	ND		0.0020		*	3070429	07/30/03	07/30/03	EPA 7470A	
Potassium	ND		12	1,913		3070448	07/30/03	07/30/03	EPA 6010B	
Magnesium	81		2.5					11		
Manganese	33		0.050	*			10		(*)	
Molybdenum	ND		0.10	**		16		07/30/03	*	
Nickel	0.42		0.15		**			07/30/03	100	
Lead	ND		0.38		- 4			07/30/03	190	
Antimony	ND		0.30		*	*		*	100	
Selenium	ND		0.50	(*)						
Titanium	1.0		0.050				7.0	07/30/03	10.5	
Thallium	ND		0.50				*	07/30/03	.00	
Vanadium	0.90		0.050	*				07/30/03	1.70	
Zinc	0.28		0.10				*	*	**	





Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P307335 Reported: 08/19/03 12:04

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	
A20-BML03 (P307335-13) Soil	Sampled: 07/16/03 12:00		Received:	Received: 07/16/03 14:25							
Silver	ND		0.035	mg/l	1	3070448	07/30/03	07/30/03	EPA 6010B		
Aluminum	24		1.0		-	*	*	#	# #		
Arsenic	ND		0.50	18.	- 4	-	1000				
Boron	ND		0.50	1.85			7461				
Barium	8.0		0.050	839.0			5965				
Beryllium	ND		0.0050								
Calcium	130		5.0				1.0				
Cadmium	ND		0.050								
Cobalt	0.53		0.035			*	*				
Chromium	0.063		0.050	200	*				*		
Copper	0.19		0.050				4.7				
Iron	56		1.5			*:			141		
Mercury	ND		0.0020	0		3070429	07/30/03	07/30/03	EPA 7470A		
Potassium	ND		12			3070448	07/30/03	07/30/03	EPA 6010B		
Magnesium	35		2.5	*		"	*	"	ELV 0010E		
Manganese	35		0.050					100			
Molyhdenum	ND		0.10								
Nickel	0.31		0.15								
Lead	ND		0.38				144				
Antimony	ND		0.30				5 ii		4		
Selenium	ND		0.50		*		746	100	-		
l'itanium	0.99		0.050	09							
Thallium	ND		0.50		*	90	19				
Vanadium	0.33		0.050			10.0					
Zinc	0.37		0.10								

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 30, 2003

LDC Report Date: November 12, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308025

Sample Identification

36D-SB02-0

36D-SB02-3

36D-SB02-6

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

A duplicate sample analysis was performed on sample 36D-SB02-0 with a relative percent difference (RPD) of 42, which is outside the QC limit of 20 RPD. As the MS and MSD analysis were within QC limits, no qualification of the data was made based on this anomaly.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample 36D-SB02-0, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Lead - Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS

Project Number: N/A

Project Manager: Bruce Lewis

P308025 Reported: 08/25/03 15:56

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
36D-SB02-0 (P308025-13) Soil	Sampled: 07/31	/03 10:09	Received:	07/31/03	14:10					
Thallium	0.14		0.095	mg/kg	1	3080063	08/08/03	08/08/03	EPA 6020	
36D-SB02-3 (P308025-14) Soil	Sampled: 07/31	/03 10:23	Received:	07/31/03	14:10					
Thallium	ND	12.5	0.097	mg/kg	1	3080063	08/08/03	08/08/03	EPA 6020	
36D-SB02-6 (P308025-15) Soil	Sampled: 07/31/	/03 10:35	Received:	07/31/03	14:10					
Thallium	ND		0.098	mg/kg	1.	3080063	08/08/03	08/08/03	EPA 6020	
36D-SB02-15E (P308025-16) W	ater Sampled: 0	7/31/03 1	1:04 Recei	ved: 07/3	1/03 14:10					
Thallium	ND		2.0	ug/l	1	3080141	08/08/03	08/08/03	EPA 6020	

The results in this report apply to the samples analyzed in accordance with the chain



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 31, 2003

LDC Report Date: November 12, 2003

Matrix: Soil

Parameters: Lead

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308035

Sample Identification

A49-LBP03-0

A49-LBP03-0.5

A49-LBP03-1

A49-LBP10-0

A49-LBP10-0.5

A49-LBP10-1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
P308035-01 (A49-LBP03-0, A49-LBP03-0.5, A49-LBP03-1, A49-LBP10-0, A49-LBP10-0.5, A49-LBP10-1.0)	Lead	76 (80-120)	75 (80-120)	3 (20)	J detects, UJ nondetects	A

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample A49-LBP01-0, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS

Lead - Data Qualification Summary - SDG P308035

SDG	Sample	Analyte	Flag	A or P	Reason
P308035	A49-LBP03-0 A49-LBP03-0.5 A49-LBP03-1 A49-LBP10-0 A49-LBP10-0.5 A49-LBP10-1	Lead	J detects, UJ nondetects	A	Matrix spike/matrix spike duplicate % recoveries below control limits

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308035

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS

Project Number: N/A

Project Manager: Bruce Lewis

P308035 Reported: 08/15/03 12:12

Analyte Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
A49-LBP01-0 (P308035-01) Soil Sampled: 07/31/03	09:40 Receiv	ved: 07/31	/03 13:01					
Lead 12 A49-LBP01-0.5 (P308035-02) Soil Sampled: 07/31/0	0.22 03 09:50 Rec	mg/kg eived: 07/	1 31/03 13:0	3080062 1	08/05/03	08/12/03	EPA 6020	
Lead 7.6 A49-LBP01-1 (P308035-03) Soil Sampled: 07/31/03	0.23 09:55 Receiv	mg/kg ved: 07/31	l /03 13:01	3080062	08/05/03	08/12/03	EPA 6020	
Lead 4.4 A49-LBP02-0 (P308035-04) Soil Sampled: 07/31/03	0.24 10:04 Receiv	mg/kg ved: 07/31	l /03 13:01	3080062	08/05/03	08/12/03	EPA 6020	
Lead 7.5 A49-LBP02-0.5 (P308035-05) Soil Sampled: 07/31/0	0.25 03 10:15 Rece	mg/kg	l 31/03 13:0	3080062 1	08/05/03	08/12/03	EPA 6020	
Lead 8.1 A49-LBP02-1 (P308035-06) Soil Sampled: 07/31/03	0.24 10:24 Receiv	mg/kg /ed: 07/31	1 /03 13:01	3080062	08/05/03	08/12/03	EPA 6020	
Lead 5.2 A49-LBP03-0 (P308035-07) Soil Sampled: 07/31/03	0.25 10:55 Receiv	mg/kg /ed: 07/31	1 /03 13:01	3080062	08/05/03	08/12/03	EPA 6020	
Lead 11 A49-LBP03-0.5 (P308035-08) Soil Sampled: 07/31/0	0.25 03 11:04 Rece	mg/kg	1 31/03 13:0	3080062 1	08/05/03	08/12/03	EPA 6020	
Lead 6.5 A49-LBP03-1 (P308035-09) Soil Sampled: 07/31/03	0.25 11:09 Receiv	mg/kg red: 07/31	l /03 13:01	3080062	08/05/03	08/12/03	EPA 6020	
Lead 6.1	0.25	mg/kg	1	3080062	08/05/03	08/12/03	EPA 6020	-





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308035 Reported: 08/15/03 12:12

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
A49-LBP09-0 (P308035-10) Soil	Sampled: 07/31/03 11:2	20 Receiv	ed: 07/31	/03 13:01					
Lead	13	0.21	mg/kg	1	3080062	08/05/03	08/12/03	EPA 6020	
A49-LBP09-0.5 (P308035-11) Soil	Sampled: 07/31/03 11	:25 Rece	ived: 07/3	31/03 13:0	1				
Lead	12	0.25	mg/kg	1	3080062	08/05/03	08/12/03	EPA 6020	
A49-LBP09-1 (P308035-12) Soil	Sampled: 07/31/03 11:3	30 Receiv	ed: 07/31	/03 13:01					
Lead	10	0.21	mg/kg	1	3080062	08/05/03	08/12/03	EPA 6020	
A49-LBP10-0 (P308035-13) Soil	Sampled: 07/31/03 11:4	5 Receiv	ed: 07/31	/03 13:01					
Lead	31	0.24	mg/kg	1	3080062	08/05/03	08/12/03	EPA 6020	
A49-LBP10-0.5 (P308035-14) Soil	Sampled: 07/31/03 11	:50 Rece	ived: 07/	31/03 13:0	1				
Lead	31	0.22	mg/kg	1	3080062	08/05/03	08/12/03	EPA 6020	
A49-LBP10-1 (P308035-15) Soil	Sampled: 07/31/03 11:5	55 Receiv	ed: 07/31	/03 13:01					
Lead	32	0.23	mg/kg	1	3080062	08/05/03	08/12/03	EPA 6020	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 1, 2003

LDC Report Date: November 12, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308047

Sample Identification

32D-SB07-5 32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within OC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
32D-SB07-5MS/MSD (32D-SB07-5, 32D-SB07-10)	Antimony Calcium Copper	38 (80-120) 91 (80-120) 51 (80-120)	39 (80-120) 78 (80-120) 85 (80-120)	12 (20) 15 (20) 13 (20)	J detects, UJ nondetects	A
	Zinc	205 (80-120)	137 (80-120)	11 (20)	J detects	

Matrix spike recoveries for aluminum, barium, iron, magnesium, manganese, potassium, and 3

titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample 32D-SB07-5, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS

Lead - Data Qualification Summary - SDG P308047

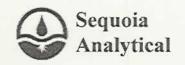
SDG	Sample	Analyte	Flag	A or P	Reason
P308047	32D-SB07-5 32D-SB07-10	Antimony, Calcium, Copper	J detects, UJ nondetects	A	Matrix spike/matrix spike duplicate % recoveries below control limits
P308047	32D-SB07-5 32D-SB07-10	Zinc	J detects	A	Matrix spike/matrix spike duplicate % recoveries above control limits

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308047

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS

P308047 Reported:

Project Number: N/A Project Manager: Bruce Lewis

09/09/03 16:33

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV Qu
32D-SB07-5 (P308047-02) Soil	Sampled: 08/01/0	3 09:50	Received:	08/01/03	14:07					-	uu
Silver	ND		0.34	mg/kg	1	3080076	08/08/03	08/11/03	EPA 6010B		
Aluminum	15000		24	**	"		"	"	"		
Arsenic	4.3		0.48	*	5	"	"	08/26/03	EPA 6020		
Boron	ND		4.8		1	*		08/11/03	EPA 6010B		
Barium	100		0.48			**	w	11	11		
Beryllium	0.36		0.048	**	**	**	**		**		
Calcium	2400		48		**	**	**	.00	29.		
Cadmium	ND		0.48		**	"		"	*		
Cobalt	9.4		0.34			"	"		**		
Chromium	41		0.48	**		*	"	10	*		
lexavalent Chromium	ND		0.21		"	3080258	08/14/03	08/15/03	EPA 7196A		u-
Copper	57		0.96		"	3080076	08/08/03	08/11/03	EPA 6010B		u-
ron	21000		24					**	**		
Mercury	0.13		0.017		***	3080172	08/13/03	08/14/03	EPA 7471A		
otassium	1500		120			3080076	08/08/03	08/11/03	EPA 6010B		
Magnesium	4900		24			•			*		
Manganese	330		0.48		**				**		
Molybdenum	2.4		0.96		*	"	.11		**		
Sodium	220		24		"	**	"		**		
Nickel	33		1.4		**		"				
Lead	4.4		0.24			*	,,	08/21/03	EPA 6020		
Antimony	ND		0.24								UJ
Selenium	ND		0.48			*		08/22/03			
Citanium	660		0.96					08/11/03	EPA 6010B		
Challium	0.098		0.096		m1	m I		08/21/03	EPA 6020		
Vanadium	46		0.48			**	38	08/11/03	EPA 6010B		
Zinc	63		0.96								J

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis

P308047 Reported: 09/09/03 16:33

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-10 (P308047-03) Soil	Sampled: 08/01/	03 10:05	Received	: 08/01/03	14:07					
Silver	ND		0.32	mg/kg	1	3080076	08/08/03	08/11/03	EPA 6010B	
Aluminum	8300		23	**	"	"	**			
Arsenic	11		0.45	W	5	**	**	08/26/03	EPA 6020	
Boron	ND		4.5		1		**	08/11/03	EPA 6010B	
Barium	54		0.45				"	"		
Beryllium	0.20		0.045			*	"	*		
Calcium	2000		45	**		*	**	*		
Cadmium	ND		0.45	**	**	**	**	300	**	
Cobalt	4.6		0.32		**	**	.11	900	196	
Chromium	18		0.45				"		*	
Hexavalent Chromium	ND		0.21	**	**	3080258	08/14/03	08/15/03	EPA 7196A	U
Copper	32		0.90			3080076	08/08/03	08/11/03	EPA 6010B	
Iron	14000		23		"		"		"	
Mercury	ND		0.019	10		3080172	08/13/03	08/14/03	EPA 7471A	
Potassium	1100		110			3080076	08/08/03	08/11/03	EPA 6010B	
Magnesium	3200		23		n			"		
Manganese	160		0.45							
Molybdenum	ND		0.90		41		**			
Sodium	220		23						**	
Nickel	16		1.4	10	17	H		: 11	"	
Lead	2.2		0.23	**			.96	08/21/03	EPA 6020	
Antimony	ND		0.23						- "	
Selenium	ND		0.45					08/22/03	*	
Fitanium	360		0.90		,,	"		08/11/03	EPA 6010B	
Thallium	ND		0.090	**				08/21/03	EPA 6020	
Vanadium	30		0.45					08/11/03	EPA 6010B	
Zinc	40		0.90			u,			"	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 31, 2003

LDC Report Date: November 12, 2003

Matrix: Soil

Parameters: Lead

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308051 (Revised 10/7/03)

Sample Identification

A49-LBP04-0.5 A49-LBP04-1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
A49-LBP04-0 (A49-LBP04-0,	Lead	47 (80-120)	52 (80-120)	2 (20)	J detects, UJ nondetects	A
A49-LBP04-0.5, A49-LBP04-1)					os nondetects	

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample A49-LBP04-0, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS

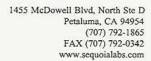
Lead - Data Qualification Summary - SDG P308051

SDG	Sample	Analyte	Flag	A or P	Reason
P308051	A49-LBP04-0 A49-LBP04-0.5 A49-LBP04-1	Lead	J detects, UJ nondetects	A	Matrix spike/matrix spike duplicate % recoveries below control limits

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308051

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis

P308051 Reported: 10/07/03 16:57

aual -

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	R Result	eporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
A49-LBP04-0 (P308051-01) Soil Sa	mpled: 07/31/03 12:50	Receiv	ed: 08/01/	03 14:07					
Lead A49-LBP04-0.5 (P308051-02) Soil	36 Sampled: 07/31/03 12:5	0.23 5 Rece	mg/kg ived: 08/0	1 01/03 14:0°	3080074 7	08/05/03	08/13/03	EPA 6020	
Lead A49-LBP04-1 (P308051-03) Soil Sa	24 mpled: 07/31/03 13:07	0.24 Receiv	mg/kg ed: 08/01/	l /03 14:07	3080074	08/05/03	08/13/03	EPA 6020	
Lead A49-LBP05-0 (P308051-04) Soil Sa	18 mpled: 07/31/03 13:22	0.25 Receiv	mg/kg ed: 08/01/	1 / 03 14:07	3080074	08/05/03	08/13/03	EPA 6020	
Lead A49-LBP05-0.5 (P308051-05) Soil	20 Sampled: 07/31/03 13:2	0.20 5 Rece	mg/kg ived: 08/0	1 01/03 14:0	3080074 7	08/05/03	08/13/03	EPA 6020	
Lead A49-LBP05-1 (P308051-06) Soil Sa	18 mpled: 07/31/03 13:33	0.22 Receiv	mg/kg ed: 08/01/	1 /03 14:07	3080074	08/05/03	08/13/03	EPA 6020	•
Lead A49-LBP06-0 (P308051-07) Soil Sa	16 mpled: 07/31/03 13:43	0.24 Receiv	mg/kg ed: 08/01/	1 /03 14:07	3080074	08/05/03	08/13/03	EPA 6020	
Lead A49-LBP06-0.5 (P308051-08RE1) So	17 il Sampled: 07/31/03	0.24 13:47	mg/kg Received:	1 08/01/03	3080074 14:0 7	08/05/03	08/13/03	EPA 6020	
Lead A49-LBP06-1 (P308051-09) Soil Sa	20 impled: 07/31/03 13:55	0.25 Receiv	mg/kg ed: 08/01/	5 / 03 14:07	3090613	09/26/03	09/29/03	EPA 6020	
Lead	14	0.24	mg/kg	1	3080074	08/05/03	08/13/03	EPA 6020	

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 4, 2003

LDC Report Date: October 22, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5 32D-SB06-15

P308071 METALS

1

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B, 6020, and 7471A. The metals analyzed included Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

3

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
32D-SB07-2.5	Aluminum	243 (80-120)	NR (80-120)	5 (20)	None	None
(32D-SB07-2.5,	Antimony	40 (80-120)	37 (80-120)	7 (20)	J/UJ	A
32D-SB06-15)	Barium	111 (80-120)	140 (80-120)	6 (20)	None	None
,	Boron	79 (80-120)	78 (80-120)	2 (20)	J/UJ	A
	Calcium	136 (80-120)	192 (80-120)	5 (20)	None	None
	Cobalt	30 (80-120)	23 (80-120)	1 (20)	J/R	A
	Chromium	79 (80-120)	78 (80-120)	3 (20)	J/UJ	A
	Iron	NR (80-120)	520 (80-120)	7 (20)	None	None
	Magnesium	NR (80-120)	NR (80-120)	3 (20)	None	None
	Nickel	21 (80-120)	15 (80-120)	2 (20)	J/R	A
	Potassium	140 (80-120)	164 (80-120)	4 (20)	None	None
	Silver	75 (80-120)	74 (80-120)	0.5 (20)	J/UJ	A
	Sodium	109 (80-120)	124 (80-120)	9 (20)	J detects	A
	Titanium	432 (80-120)	368 (80-120)	2 (20)	None	None
	Zinc	102 (80-120)	65 (80-120)	10 (20)	J/UJ	A
	Mercury	115 (80-120)	133 (80-120)	3 (20)	J detects	A

The sample concentrations of aluminum, barium, calcium, iron, magnesium, potassium, and titanium were greater than four times that of the spike concentrations. Therefore, no qualifications are necessary.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

4

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

5

P308071 METALS

Aerojet RI/FS Metals - Data Qualification Summary - SDG P308071

SDG	Sample	Analyte	Flag	A or P	Reason
P308071	32D-SB07-2.5 32D-SB06-15	Cobalt Nickel	J detects R nondetects	A	Matrix spike % Recovery below 30%
P308071	32D-SB07-2.5 32D-SB06-15	Mercury	J detects	A	Matrix spike % Recovery above control limits
P308071	32D-SB07-2.5 32D-SB06-15	Antimony Boron Chromium Silver Zinc	J detects UJ nondetects	A	Matrix spike % Recovery below control limits

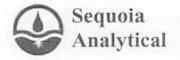
Aerojet RI/FS

Metals - Laboratory Blank Data Qualification Summary - SDG P308071

No Sample Data Qualified in this SDG

P308071 METALS 6





Project: Aerojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P308071 Reported: 09/09/03 16:50

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-2,5 (P308071-01) Soil	Sampled: 08/04/0	3 09:05	Received	I: 08/04/0	3 14:17					PU cem
Silver	ND		0.33	mg/kg	1	3080213	08/18/03	08/18/03	EPA 6010B	w
Aluminum	13000		24		- 11	**		**	**	
Arsenic	3.5		0.47		5		-	08/26/03	EPA 6020	
Boron	ND		4.7		1		**	08/18/03	EPA 6010B	w
Barium	100		0.47		(46)		6	11	**	
Beryllium	0.32		0.047	**		18	900	.95		
Calcium	2400		47				70		*	
Cadmium	ND		0.47	*			*			
Cobalt	11		0.33	-	2		"			7
Chromium	56		0.47		*	*	"			7
Hexavalent Chromium	0.64		0.21		*	3080258	08/14/03	08/15/03	EPA 7196A	J
Copper	33		0.94	10		3080213	08/18/03	08/18/03	EPA 6010B	
Iron	21000		24	н			**	30	10	
Mercury	0.020		0.017	#		3080172	08/13/03	08/14/03	EPA 7471A	J
Potassium	1500		120	**		3080213	08/18/03	08/18/03	EPA 6010B	
Magnesium	5900		24	n				"	*	
Manganese	410		0.47	.00			*	5#		
Molybdenum	1.1		0.94						"	
Sodium	220		24		*	**			**	
Nickel	54		1.4			(#)	*		**	J
Lead	8.2		0.24	-			**	08/22/03	EPA 6020	
Antimony	ND		0.24	-	1.00		и.	08/21/03	-	W
Selenium	ND		0.47	**	2.0	0	**	08/22/03	**	
Titanium	610		0.94	**	1.60	-96.7	+	08/18/03	EPA 6010B	
Thallium	0.14		0.094	36			-	08/30/03	EPA 6020	
Vanadium	47		0.47	22	(8)		#	08/18/03	EPA 6010B	
Zine	68		9.4		.10	.*		08/27/03		7





Project: Aerojet RI/FS

Project Number: N/A

Project Manager: Bruce Lewis

P308071 Reported: 09/09/03 16:50

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL.	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB06-15 (P308071-06) Soil	Sampled: 08/04/	03 12:45	Received	: 08/04/03	14:17					DI auni
Silver	ND		0.31	mg/kg	1	3080213	08/18/03	08/18/03	EPA 6010B	w
Aluminum	10000		22		"			*	*	-
Arsenie	3.0		0.45		5	150		08/26/03	EPA 6020	
Boron	ND		4.5		1	50		08/18/03	EPA 6010B	W
Barium	70		0.45	17		1.81				00
Beryllium	0.24		0.045	*					38	
Calcium	1800		45						."	
Cadmium	ND		0.45	*			*	*		
Cobalt	5.5		0.31		# 1		*		*	1
Chromium	30		0.45		60	0.00	*			1
Hexavalent Chromium	0.39		0.20	*	#	3080258	08/14/03	08/15/03	EPA 7196A	J
Copper	24		0.89		#7	3080213	08/18/03	08/18/03	EPA 6010B	_
Iron	15000		22				# THE STATE OF THE			
Mercury	0.046		0.018	-5	*	3080172	08/13/03	08/14/03	EPA 7471A	J
Potassium	1200		110			3080213	08/18/03	08/18/03	EPA 6010B	3
Magnesium	3300		22			**				
Manganese	190		0.45	- 1	w					
Molybdenum	ND		0.89	14	196	46	*			
Sodium	170		22	9	(60		- in			
Nickel	23		1.3	-11	100		9.	1.66		3
Lead	3.4		0.22	36			:#:	08/23/03	EPA 6020	5
Antimony	ND		0.22		((#))		196	08/21/03	"	
Selenium	ND		0.45	**	(*)	100		08/23/03		
Titanium	500		0.89	,,	17	9.0		08/18/03	EPA 6010B	
Thallium	ND		0.089		*		-	08/23/03	EPA 6020	
Vanadium	37		0.45					08/18/03	EPA 6010B	
Zinc	46		8.9		10			08/27/03		١

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 5, 2003

LDC Report Date: October 29, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5 32D-SB05-7

P308126 METALS

1

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010 and 7471A. The metals analyzed included Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
32D-SB06-35	Aluminum	NR (80-120)	NR (80-120)	14 (20)	None	None
(32D-SB06-2.5,	Antimony	10 (80-120)	6 (80-120)	42 (20)	R/J	A
32D-SB06-7)	Barium	NR (80-120)	45 (80-120)	15 (20)	None	None
	Boron	75 (80-120)	65 (80-120)	13 (20)	UJ/J	A
	Calcium	NR (80-120)	NR (80-120)	3 (20)	None	None
	Iron	0 (80-120)	367 (80-120)	5 (20)	None	None
	Magnesium	235 (80-120)	347 (80-120)	6 (20)	None	None
	Manganese	NR (80-120)	131 (80-120)	8 (20)	None	None
	Molybdenum	73 (80-120)	63 (80-120)	12 (20)	UJ/J	A

P308126 METALS

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
	Nickel	23 (80-120)	40 (80-120)	9 (20)	R/J	A
	Potassium	160 (80-120)	143 (80-120)	3 (20)	None	None
	Selenium	80 (80-120)	74 (80-120)	8 (20)	UJ/J	A
	Sodium	113 (80-120)	70 (80-120)	18 (20)	UJ/J	A
	Titanium	576 (80-120)	89 (80-120)	7 (20)	None	None
	Zinc	91 (80-120)	150 (80-120)	22 (20)	UJ/J	A

The concentrations of aluminum, barium, calcium, iron, magnesium, manganese, potassium, and titanium in the sample were greater than four times the spike amount. No qualifications of these analytes are necessary.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Metals - Data Qualification Summary - SDG P308126

SDG	Sample	Analyte	Flag	A or P	Reason
P308126	32D-SB05-2.5 32D-SB05-7	Boron Molybdenum Selenium Sodium	J detects UJ nondetects	A	Matrix spike % Recovery below control limits
P308126	32D-SB05-2.5 32D-SB05-7	Antimony Nickel	J detects R nondetects	A	Matrix spike % Recovery below 30%
P308126	32D-SB05-2.5 32D-SB05-7	Zinc	J detects	A	Matrix spike % Recovery avove control limits
P308126	32D-SB05-2.5 32D-SB05-7	Antimony Zinc	J detects UJ nondetects	A	Matrix spike RPD above control limits

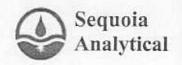
Aerojet RI/FS

Metals - Laboratory Blank Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

P308126 METALS 5





Project: Acrojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308126 Reported: 09/11/03 18:20

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB05-2.5 (P308126-04) Soil	Sampled: 08/0	05/03 10:15	Received	1: 08/05/0	3 13:17					DU CLUE
Silver	ND		0.24	mg/kg	5	3080210	08/12/03	08/28/03	EPA 6020	
Aluminum	5800		24	"	1		*	08/22/03	EPA 6010B	
Arsenic	2.7	0.33	2.4	*	5	5.0		08/28/03	EPA 6020	
Boron	ND		4.7		1	*		08/22/03	EPA 6010B	LU
Barium	31		0,47	**	1.0	2.87	40		- "	
Beryllium	0.096		0.047	.#	- *	1.00				
Calcium	2300		47	77.					*	
Cadmium	ND		0.24	**	5		"	08/28/03	EPA 6020	R-01
Cobalt	5.4		0.33		1			08/22/03	EPA 6010B	
Chromium	18		0.47	"		-				
Hexavalent Chromium	ND		0.13		*	3080394	08/21/03	08/22/03	EPA 7196A	
Copper	26		0.94			3080210	08/12/03	08/22/03	EPA 6010B	
Iron	9400		24			*	*			
Mercury	ND		0.020	**		3080173	08/19/03	08/20/03	EPA 7471A	
Potassium	680		120	**		3080210	08/12/03	08/22/03	EPA 6010B	
Magnesium	3300		24	*					*	
Manganese	120		0.47	*	*	4.0	*			
Molybdenum	ND		0.94	*				*	*	w
Sodium	230		24	*		10.7	*	78	*	7
Nickel	11		1.4	80		0.0			**	3
Lead	2.3	0.042	1.2	*1	5	.0		08/28/03	EPA 6020	
Antimony	ND		1.2	*				*	*	R-01 K
Selenium	ND		0.47	*	1	. #	*	08/23/03		W
Titanium	280		0.94	15.5		(#)	**	08/22/03	EPA 6010B	2007
Thallium •	ND .		0.47		5			08/28/03	EPA 6020	R-01
Vanadium	19		0.47	*	1	(#1)	75	08/22/03	EPA 6010B	
Zinc	25		0.94				*			7





Project: Aerojet RI/FS Project Number: N/A Project Manager: Bruce Lewis P308126 Reported: 09/11/03 18:20

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL.	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB05-7 (P308126-05) Soil	Sampled: 08/05	/03 10:25	Received:	08/05/03	13:17			- T ₁ ()		PULL
Silver	ND		0,050	mg/kg	1	3080210	08/12/03	08/23/03	EPA 6020	
Aluminum	9100		25	*				08/22/03	EPA 6010B	
Arsenic	5.1	0.36	2.5	.91	5	29	W:	08/28/03	EPA 6020	
Boron	ND		5.0	"	1	3.40	#:	08/22/03	EPA 6010B	W
Barium	28		0.50	#		1.0	#:	. #		0.0
Beryllium	0.092		0.050	*	3.97			58		
Calcium	4100		50	*	100		*			
Cadmium	0.25		0.25	"	5			08/28/03	EPA 6020	
Cobalt	9.6		0.35	"	1			08/22/03	EPA 6010B	
Chromium	18		0.50			*				
Hexavalent Chromium	ND		0.096			3080394	08/21/03	08/22/03	EPA 7196A	
Copper	34		1.0	*	*	3080210	08/12/03	08/22/03	EPA 6010B	
Iron	19000		25	*						
Mercury	ND		0.014	**		3080173	08/19/03	08/20/03	EPA 7471A	
Potassium	410		120		*	3080210	08/12/03	08/22/03	EPA 6010B	
Magnesium	5900		25	H .	100			**		
Manganese	700		0.50	*		(1)	*		**	
Molybdenum	ND		1.0	+		***			W.	W
Sodium	160		25	4.		100				J
Nickel	15		1.5					76		7
Lead	1.9	0.0090	0.25			190		08/23/03	EPA 6020	
Antimony	ND		0.25	*	*	-0.	(€	"	#	R
Selenium	ND		0.50	78	190	*			*	W
Fitanium	400		1.0		*		*	08/22/03	EPA 6010B	31.7
Thallium	0.12		0.10	181		29.7		08/23/03	EPA 6020	
Vanadium	41		0.50					08/22/03	EPA 6010B	
Zinc	45		1.0	70	2000		11:	"	"	2

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 15, 2003

LDC Report Date: October 22, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308354

Sample Identification

10D-SS10

10D-SS21

10D-SS22

P308354 METALS

1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010 and 7470A. The metals analyzed included Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Silver, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
10D-SS10 10D-SS21 10D-SS22	Mercury	41	28	J detects UJ nondetects	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

3

P308354 METALS

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
11D-SNS09 (10D-SS10, 10D-SS21, 10D-SS22)	Arsenic Barium Beryllium Cadmium Chromium Copper Lead Manganese Nickel	108 (80-120) 105 (80-120) 106 (80-120) 111 (80-120) 106 (80-120) 105 (80-120) 106 (80-120) 104 (80-120) 104 (80-120)	133 (80-120) 121 (80-120) 128 (80-120) 124 (80-120) 128 (80-120) 122 (80-120) 127 (80-120) 125 (80-120) 128 (80-120)	21 (20) 15 (20) 19 (20) 11 (20) 19 (20) 15 (20) 18 (20) 18 (20) 21 (20)	J/UJ J J J J J	A A A A A A
	Silver Zinc	107 (80-120) 102 (80-120)	125 (80-120) 128 (80-120)	15 (20) 15 (20)	J J	A A

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks



P308354 METALS 5

Aerojet RI/FS Metals - Data Qualification Summary - SDG P308354

SDG	Sample	Analyte	Flag	A or P	Reason
P308354	10D-SS10 10D-SS21 10D-SS22	Mercury	J detects UJ nondetects	P	Analysis performed past holding time
P308354	10D-SS10 10D-SS21 10D-SS22	Arsenic Barium Beryllium Cadmium Chromium Copper Lead Manganese Nickel Silver Zinc	J detects	A	Matrix spike % Recovery above control limits
P308354	10D-SS10 10D-SS21 10D-SS22	Arsenic Nickel	J detects UJ nondetects	A	Matrix spike RPD above control limits

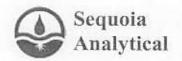
Aerojet RI/FS

Metals - Laboratory Blank Data Qualification Summary - SDG P308354

No Sample Data Qualified in this SDG

P308354 METALS 6





Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P308354 Reported: 09/02/03 15:52

DI STLC CAM Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

Anulyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SS10 (P308354-01) Soil	Sampled: 07/15/03 13:45	Received:	08/19/03	16:01					DU ceun
Silver	ND	0.035	mg/l	1	3080432	08/22/03	08/23/03	EPA 6010B	
Arsenic	ND	0.50	**	**	**	*		-	W
Barium	0.12	0.050	190	- 14	.01	(#.)	14		7
Beryllium	ND	0.0050					90.	5.	
Cadmium	ND	0.050	**	**		*	*	7.	
Chromium	ND	0.050	10	**					
Hexavalent Chromium	ND	0.0050			3080419	08/25/03	08/28/03	EPA 7196	HT-05 W
Copper	ND	0.050	0.00		3080432	08/22/03	08/23/03	EPA 6010B	
Mercury	ND	0.00025	596		3080361	08/25/03	08/25/03	EPA 7470A	HT-05 W
Manganese	ND	0.050	1980		3080432	08/22/03	08/23/03	EPA 6010B	
Nickel	ND	0.15	**			"	"		
Lead	ND	0.38		*		*			
Zinc	0.40	0.10				40			2
10D-SS21 (P308354-02) Soil	Sampled: 07/15/03 14:00	Received:	08/19/03	16:01					
Silver	ND	0.035	mg/l	1	3080432	08/22/03	08/23/03	EPA 6010B	
Arsenic	ND	0.50			*		#		W
Barium	0.29	0.050	1200			* .	20	*	١
Beryllium	ND	0.0050	**		*				160
Cadmium	ND	0.050			*				
Chromium	ND	0.050	.0		*		*	н	
Hexavalent Chromium	ND	0.0050	(196)		3080419	08/25/03	08/28/03	EPA 7196	HT-05 W
Copper	ND	0.050	500		3080432	08/22/03	08/23/03	EPA 6010B	
Mercury	ND	0.00025	1000	*	3080361	08/25/03	08/25/03	EPA 7470A	HT-05 W
Manganese	0.075	0.050	W	-	3080432	08/22/03	08/23/03	EPA 6010B	
Nickel	ND	0.15				44			
Lead	ND	0.38	36	*	*	(#)	**	н	
Zinc	2.0	0.10			#."			100	1

11/1403





Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P308354 Reported: 09/02/03 15:52

DI STLC CAM Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SS22 (P308354-03) Soil	Sampled: 07/15/03 14:05	Received:	08/19/03	16:01			197.5		DU au
Silver	ND	0.035	mg/l	1	3080432	08/22/03	08/23/03	EPA 6010B	
Arsenic	ND	0.50		*			77	"	W
Barium	0.14	0.050							J
Beryllium	ND	0.0050	100				19		
Cadmium	ND	0.050							
Chromium	ND	0.050	*	₩:	- 1	*		1.4	
Hexavalent Chromium	ND	0.0050			3080419	08/25/03	08/28/03	EPA 7196	HT-05 VY
Copper	ND	0.050			3080432	08/22/03	08/23/03	EPA 6010B	111-05 6.5
Mercury	ND	0.00025	-		3080361	08/25/03	08/25/03	EPA 7470A	HT-05 (J)
Manganese	ND	0.050	- 44	**	3080432	08/22/03	08/23/03	EPA 6010B	111-05 00
Nickel	ND	0.15			#	8	*	# #	
Lead	ND	0.38		#3	1063				
Zinc	0.94	0.10		. 10	3.00	*	000		1
									2

1/17/00

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 14, 2003

LDC Report Date: October 22, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308355

Sample Identification

11D-SNS09

11D-SNS08

11D-SNS07

P308355 METALS

1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B and 7470A. The metals analyzed included Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Silver, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
11D-SNS09 11D-SNS08 11D-SNS07	Mercury	40	28	J detects UJ nondetects	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

3

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
11D-SNS09	Arsenic	108 (80-120)	133 (80-120)	21 (20)	J/UJ	A
(11D-SNS09,	Barium	105 (80-120)	121 (80-120)	15 (20)	J	A
11D-SNS08,	Beryllium	106 (80-120)	128 (80-120)	19 (20)	J	A
11D-SNS07)	Cadmium	111 (80-120)	124 (80-120)	11 (20)	J	A
	Chromium	106 (80-120)	128 (80-120)	19 (20)	J	A
	Copper	105 (80-120)	122 (80-120)	15 (20)	J	A
	Lead	106 (80-120)	127 (80-120)	18 (20)	J	A
	Manganese	104 (80-120)	125 (80-120)	18 (20)	J	A
	Nickel	104 (80-120)	128 (80-120)	21 (20)	J/UJ	A
	Silver	107 (80-120)	125 (80-120)	15 (20)	J	A
	Zinc	102 (80-120)	128 (80-120)	15 (20)	J	A

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks



P308355 METALS 5

Aerojet RI/FS Metals - Data Qualification Summary - SDG P308355

SDG	Sample	Analyte	Flag	A or P	Reason
P308355	11D-SNS09 11D-SNS08 11D-SNS07	Mercury	J detects UJ nondetects	P	Analysis performed past holding time
P308355	11D-SNS09 11D-SNS08 11D-SNS07	Arsenic Barium Beryllium Cadmium Chromium Copper Lead Manganese Nickel Silver Zinc	J detects	A	Matrix spike % Recovery above control limits
P308355	11D-SNS09 11D-SNS08 11D-SNS07	Arsenic Nickel	J detects UJ nondetects	A	Matrix spike RPD above control limits

Aerojet RI/FS

Metals - Laboratory Blank Data Qualification Summary - SDG P308355

No Sample Data Qualified in this SDG

P308355 METALS 6





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308355 Reported: 08/26/03 17:37

DI STLC CAM Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

Anniyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
11D-SNS09 (P308355-01) Soil	Sampled: 07/14/03 10:45	Received	1: 08/19/	03 16:02					210
Silver	ND	0.035	mg/l	1	3080432	08/22/03	08/23/03	EPA 6010B	
Arsenic	ND	0.50			.11		**	.11	ü
Barium	0.054	0.050	90		.9.			.77	J
Beryllium	ND	0.0050	9.		29	2.4		"	
Cadmium	ND	0.050	10			1.0	*		
Chromium	ND	0.050			,,	1.7		"	
Hexavalent Chromium	ND	0.0050	"		3080395	08/21/03	08/23/03	EPA 7196	HT-05
Copper	ND	0.050			3080432	08/22/03	08/23/03	EPA 6010B	
Mercury	ND	0.00025			3080361	08/25/03	08/25/03	EPA 7470A	HT-05 U
Manganese	ND	0.050	n i		3080432	08/22/03	08/23/03	EPA 6010B	
Nickel	ND	0.15	•	**		w.		*	u
Lead	ND	0.38			*		-		
Zinc	1.4	0.10				146		m m	
11D-SNS08 (P308355-02) Soil	Sampled: 07/14/03 10:50	Received	1: 08/19/	03 16:02					
Silver	ND	0.035	mg/l	1	3080432	08/22/03	08/23/03	EPA 6010B	
Arsenie	ND	0.50			**	11	40	**	и
Barium	0.12	0.050	0.0	. #			**		
Beryllium	ND	0.0050	#	**	**	**	**		_
Cadmium	ND	0.050	9.			9.7	*	n	
Chromium	ND	0.050	97	799		9.0		18	
Hexavalent Chromium	0.0068	0.0050	*1	- 19	3080395	08/21/03	08/23/03	EPA 7196	HT-05 -
Copper	ND	0.050	*	529	3080432	08/22/03	08/23/03	EPA 6010B	
Mercury	ND	0.00025	**		3080361	08/25/03	08/25/03	EPA 7470A	HT-05 \
Manganese	0.13	0.050	**		3080432	08/22/03	08/23/03	EPA 6010B	
Nickel	ND	0.15		7.0	"			"	V
Lead	ND	0.38		70		*		"	
Zinc	3.6	0.10	11					"	

1117/03





Project: Aerojet RI/FS

Project Number: N/A
Project Manager: Bruce Lewis

P308355 Reported: 08/26/03 17:37

DI STLC CAM Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SNS27 (P308355-03) Soil	Sampled: 07/14/03 13:40	Received	1: 08/19/	03 16:02					DU Qua
Silver	ND	0.035	mg/I	1	3080432	08/22/03	08/23/03	EPA 6010B	
Arsenic	ND	0.50	"	"	"		"		
Barium	0.23	0.050			"		"		
Beryllium	ND	0.0050			= "		*	"	
Cadmium	ND	0.050	0		- 10				
Chromium	ND	0.050	*				10	"	
Hexavalent Chromium	ND	0.0050	10.		3080395	08/21/03	08/23/03	EPA 7196	HT-05
Copper	ND	0.050	W.		3080432	08/22/03	08/23/03	EPA 6010B	
Mercury	ND	0.00025			3080361	08/25/03	08/25/03	EPA 7470A	HT-05
Manganese	0.065	0.050	#C	-	3080432	08/22/03	08/23/03	EPA 6010B	
Nickel	ND	0.15	60		W	0.96		*	
Lead	ND	0.38	#		30	(00)			
Zinc	0.77	0.10			.00				
5D-SNS07 (P308355-04) Soil	Sampled: 07/15/03 09:35	Received:	08/19/0	3 16:02					
Silver	ND	0.035	mg/l	1	3080432	08/22/03	08/23/03	EPA 6010B	
Arsenic	ND	0.50	"	*	"	"	*	W	W
Barium	0.15	0.050	72	9.99	**	#.			1
Beryllium	ND	0.0050	*	**					5
Cadmium	ND	0.050		.**		"			
Chromium	ND	0.050	"		*	"	*	7	
Hexavalent Chromium	ND	0.0050	7	"	3080395	08/21/03	08/23/03	EPA 7196	HT-05 €
Copper	ND	0.050	*	"	3080432	08/22/03	08/23/03	EPA 6010B	
Mercury	ND	0.00025	-	**	3080361	08/25/03	08/25/03	EPA 7470A	HT-05 W
Manganese	0.11	0.050	**	**	3080432	08/22/03	08/23/03	EPA 6010B	
Nickel	ND	0.15	**	*	**	#-		iii	
Lead	ND	0.38	#27		- 11	#	- At	*	
Zinc	0.39	0.10	11		"		3i'		J

0/1/17/03

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 20, 2003

LDC Report Date: October 22, 2003

Matrix: Soil

Parameters: Lead

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308444

Sample Identification

C4-SNS03

C4-SNS05

C4-SNS07

P308444 METALS

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICS was not evaluated for Level III validation.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

3

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Lead - Data Qualification Summary - SDG P308444

No Sample Data Qualified in this SDG

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308444

No Sample Data Qualified in this SDG

5

P308444 METALS





Project: Aerojet RI/FS Project Number: N/A

Project Manager: Bruce Lewis

P308444 Reported: 09/09/03 18:21

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C4-SNS03 (P308444-01) Soil	Sampled: 08/20/03 10:25	Received	: 08/20/03	3 14:23					
Lead C4-SNS04 (P308444-02) Soil	110 Sampled: 08/20/03 10:40	0.24 Received:	mg/kg : 08/20/03	1 3 14:23	3080523	08/26/03	09/06/03	EPA 6020	
Lead C4-SNS05 (P308444-03) Soil	3.4 Sampled: 08/20/03 10:50	0.25 Received:	mg/kg : 08/20/03	1 3 14:23	3080523	08/26/03	09/06/03	EPA 6020	
Lead C4-SNS06 (P308444-04) Soil	94 Sampled: 08/20/03 11:00	0.25 Received:	mg/kg : 08/20/03	1 3 14:23	3080523	08/26/03	09/06/03	EPA 6020	
Lead C4-SNS07 (P308444-05) Soil	20 Sampled: 08/20/03 11:10	0.25 Received:	mg/kg : 08/20/03	1 3 14:23	3080523	08/26/03	09/06/03	EPA 6020	
Lead	320	0.25	mg/kg	1	3080523	08/26/03	09/06/03	EPA 6020	

11/2/03

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 15, 2003

LDC Report Date: October 22, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P309311

Sample Identification

10D-SS10

10D-SS21

10D-SS22

P309311 METALS

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B, 6020, and 7471A. The metals analyzed included Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
10D-SS10 10D-SS21 10D-SS22	Mercury	71	28	J detects R nondetects	Р

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The matrix spike sample, C15-SS07, was a project specific sample from SDG P307335. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
C15-SS07	Aluminum	NR (80-120)	NR (80-120)	1 (20)	None	None
(10D-SS10,	Antimony	37 (80-120)	35 (80-120)	2 (20)	J/UJ	A
10D-SS21,	Arsenic	81 (80-120)	78 (80-120)	0.2 (20)	J/UJ	A
10D-SS22)	Barium	143 (80-120)	148 (80-120)	2 (20)	None	None
	Calcium	158 (80-120)	198 (80-120)	5 (20)	None	None
	Chromium	125 (80-120)	121 (80-120)	0 (20)	J detects	A
	Iron	NR (80-120)	NR (80-120)	0.4(20)	None	None
	Magnesium	225 (80-120)	266 (80-120)	1 (20)	None	None
	Manganese	454 (80-120)	191 (80-120)	6 (20)	None	None
	Nickel	125 (80-120)	125 (80-120)	2 (20)	J detects	A
	Potassium	162 (80-120)	150 (80-120)	0.8 (20)	None	None
	Selenium	75 (80-120)	73 (80-120)	0.9 (20)	J/UJ	A
	Titanium	648 (80-120)	644 (80-120)	0.8 (20)	None	None
	Zinc	82 (80-120)	131 (80-120)	9 (20)	J detects	A

The sample concentrations of aluminum, barium, calcium, iron, magnesium, manganese, potassium, and titanium were greater than four times that of the spike concentrations. Therefore, no qualifications are necessary.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

4

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

5

P309311 METALS

Aerojet RI/FS Metals - Data Qualification Summary - SDG P309311

SDG	Sample	Analyte	Flag	A or P	Reason
P309311	10D-SS10 10D-SS21 10D-SS22	Mercury	J detects R nondetects	Р	Analysis performed past holding time
P309311	10D-SS10 10D-SS21 10D-SS22	Chromium Nickel Zinc	J detects	A	Matrix spike % Recovery above control limits
P309311	10D-SS10 10D-SS21 10D-SS22	Antimony Arsenic Selenium	J detects UJ nondetects	A	Matrix spike % Recovery below control limits

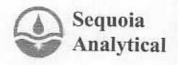
Aerojet RI/FS Metals - Laboratory Blank Data Qualification Summary - SDG P309311

No Sample Data Qualified in this SDG

6

P309311 METALS





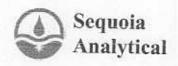
Project Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P309311 Reported: 09/24/03 18:05

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
10D-SS22 (P309311-03) Soil	Sampled: 07/15/03	14:05	Received: 09	/17/03 15	:32					DU QU
Silver	8.4		0.079	mg/kg	1.	3070440	07/24/03	09/19/03	EPA 6020	
Aluminum	26000		40	,	11	11	,,	07/28/03	EPA 6010B	
Arsenic	5.8		4.0		5	191		09/24/03	EPA 6020	
Boron	ND		7.9		1			07/28/03	EPA 6010B	2
Barium	230		0.79	Si .	Ta.			07/28/03	EPA 0010B	
Beryllium	0.83		0.079	**	5.0					
Calcium	3900		79		1.00					
Cadmium	1.6		0.079	-		(#.)	#	09/19/03	EPA 6020	
Cobalt	23		0.56	-				07/28/03	EPA 6010B	
Chromium	85		0.79				**	"	EPA 6010B	1400
Hexavalent Chromium	ND		1.0		5	3090441	09/19/03	09/19/03	EPA 7196A	J
Copper	66		1.6	**	1	3070440	07/24/03	07/28/03	EPA 6010B	HT-05 R
ron	43000		200		5	H	#	07/29/03	EFA OUTUB	
Mercury	0.20		0.019	-	- 1	3090472	09/24/03	09/24/03	EPA 7471A	THE OF P
Potassium	2200		200	100	4	3070440	07/24/03	07/28/03	EPA 6010B	HT-05 R
Magnesium	6300		40	*	1.0	*	*	07/20/03	EPA 6010B	
Manganese	900		0.79	9.					60	
Molybdenum	2.2		1.6	**			m:			
Sodium	210		40							
Nickel	66		2.4				r.		-	_
ead	38		0.40	#				09/19/03	EPA 6020	
Antimony	0.52		0.40		-			09/19/03	EFA 0020	, i
Selenium	0.18	0.057	0.79	#5		14		09/13/03		. 7
litanium	880	1000	1.6	60			17.66	07/28/03	EPA 6010B	1.7
Thallium	ND		0.16	10.	18			07/28/03		
/anadium	110		0.79			*		07/28/03	EPA 6020 EPA 6010B	
line	1000		1.6		,,	"		07/20/03	EFA 6010B	





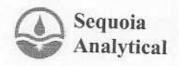
Project Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P309311 Reported: 09/24/03 18:05

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Annlyzed	Method	Notes	
10D-SS10 (P309311-01) Soil	Sampled: 07/15/03	13:45	Received: 09	/17/03 15	:32						DU Qua
Silver	0.31		0.089	mg/kg	1	3070440		2.000 0000		_	20 0
Aluminum	14000		45	" gargini		3070440	07/24/03	09/19/03	EPA 6020		
Arsenic	6.4		0.89		0.00			07/28/03	EPA 6010B		
Boron	ND		8.9	*				09/19/03	EPA 6020		3
Barium	110		0.89					07/28/03	EPA 6010B		
Beryllium	0.42		0.089						**		
Calcium	2600		89		**						
Cadmium	0.64		0.089								
Cobalt	13		0.62	**				09/19/03	EPA 6020		
Chromium	50		0.89	0		50	169	07/28/03	EPA 6010B		
lexavalent Chromium	0.62		0.20						#!)
Copper	32		1.8			3090441	09/19/03	09/19/03	EPA 7196A	HT-05	7
ron	24000		220	+		3070440	07/24/03	07/28/03	EPA 6010B		
dercury	0.11		0.017		5		*	07/29/03			
otassium	1200		220		1	3090472	09/24/03	09/24/03	EPA 7471A	HT-05	R
Iagnesium	5000		45			3070440	07/24/03	07/28/03	EPA 6010B		
fanganese	440		0.89						*		
folybdenum	ND		1.8	2000							
odium	200		45	*			140		- 2		
lickel	44		2.7				-	W .	н.		127
ead	13		0.45	17					"		7
ntimony	ND		0.45					09/19/03	EPA 6020		
elenium	0.12	0.064	0.43					09/19/03			
itanium	590	0.004	1.8	16			"			1	37
hallium	ND		0.18	-11				07/28/03	EPA 6010B		
anadium	57		0.18		**			09/19/03	EPA 6020		
ine	350		1.8	OM				07/28/03	EPA 6010B		
26259	330		1.6	177	77.1	#		191			ز





Project Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P309311 Reported: 09/24/03 18:05

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Hatch	Prepared	Analyzed	Method	Notes
10D-SS21 (P309311-02) Soil	Sampled: 07/15/03	14:00	Received: 09	/17/03 15	-32				measur	30,000.0
Silver	1.3		0.10			0-2000000000	0.7640000			D
Aluminum	19000		50	mg/kg		3070440	07/24/03	09/19/03	EPA 6020	
Arsenic	8.4		1.0	24	100			07/28/03	EPA 6010B	
Boron	ND		1.0	-			16.	09/19/03	EPA 6020	
Barium	210		1.0		*	(4)		07/28/03	EPA 6010B	
Beryllium	0.57		0.10				7.	386		
Calcium	4200		100		*		#5	.*	**	
Cadmium	2.2		0.10							
Cobalt	22				16			09/19/03	EPA 6020	
Chromium	71		0.70		"			07/28/03	EPA 6010B	
Hexavalent Chromium	ND		1.0		-44	**	#	*	(10	
Copper	70		1.0		5	3090441	09/19/03	(29/19/03	EPA 7196A	HT-05
ron	35000		2.0		-1	3070440	07/24/03	07/28/03	EPA 6010B	727
Mercury	0.23		250	123	5	"	(9)	07/29/03		
otassium	1800		0.016		1	3090472	09/24/03	09/24/03	EPA 7471A	HT-05 2
dagnesium	5500		250	40	ie.	3070440	07/24/03	07/28/03	EPA 6010B	
1anganese	690		50		24	**		7/	*	
Iolybdenum	2.3		1.0	**	-		-		**	
odium	280		2.0		*		1.00			
lickel	51		50		#6		CW.	141		
ead			3.0			*	286	100		3
ntimony	92		0.50	"		7.	**	09/19/03	EPA 6020	
elenium	0.57		0.50	"	"	7		09/19/03	The second of the second)
itanium		0.072	1.0				27	"	296	د د
hallium	860		2.0			n		07/28/03	EPA 6010B	8.5
anadium	ND		0.20		"	144		09/19/03	EPA 6020	
ine	78		1.0	28				07/28/03	EPA 6010B	
	1700		2.0	75			-	-m		.)

11/17/03

ERM/Aerojet Data Validation Reports LDC# 0310-02A6 through 0310-02S6

Hexavalent Chromium



Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 14 and 15, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Hexavalent Chromium

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307257

Sample Identification

11D-SNS09

11D-SNS08

11D-SNS06

11D-SNS05

10D-SNS24

10D-SNS25

10D-SNS26

10D-SNS27

10D-SNS28

5D-SNS09

5D-SNS07

P307257 CR6.DOC

Introduction

This data review covers eleven soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
11D-SNS09 (11D-SNS08 11D-SNS06 11D-SNS05 10D-SNS24 10D-SNS25 10D-SNS26 10D-SNS27 10D-SNS27 5D-SNS09 5D-SNS07)	Hexavalent chromium	71 (75-125)	93 (75-125)	26 (20)	UJ nondetects, J detects	A

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R)

were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Wet Chemistry - Data Qualification Summary - SDG P307257

SDG	Sample	Analyte	Flag	A or P	Reason
P307257	11D-SNS09 11D-SNS08 11D-SNS06 11D-SNS05 10D-SNS24 10D-SNS25 10D-SNS26 10D-SNS27 10D-SNS27 5D-SNS09 5D-SNS07	Hexavalent chromium	UJ nondetects, J detects	A	Matrix spike % recovery below control limits

Aerojet RI/FS

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

P307257 CR6.DOC 5

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 16, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Hexavalent Chromium

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P307335

Sample Identification

C15-SS07

C15-SS06

C15-SS05

C15-SS08

A20-BML01

A20-BML03

P307335 CR6.DOC

Introduction

This data review covers six soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
C15-SS07 (C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03)	Hexavalent chromium	73 (75-125)	89 (75-125)	19 (20)	UJ nondetects, J detects	A

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

3

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

4

P307335 CR6.DOC

Aerojet RI/FS Wet Chemistry - Data Qualification Summary - SDG P307335

SDG	Sample	Analyte	Flag	A or P	Reason
P307335	C15-SS07, C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03	Hexavalent chromium	UJ nondetects, J detects	A	Matrix spike % recovery below control limits

Aerojet RI/FS

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P307335

No Sample Data Qualified in this SDG

P307335 CR6.DOC 5





Project: Aerojet RI/FS Project Number: RI-FS Project Manager: Bruce Lewis

P307335 Reported: 08/19/03 12:04

DI STLC CAM Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
A20-BML01 (P307335-10) Soil	Sampled: 07/16/03 10:20	Received:	07/16/03	14:25				U BIGVARA	HAVAGE)
Hexavalent Chromium	ND	0.025	mg/l	5	3070608	07/31/03	07/31/03	EPA 7196	R-01
A20-BML02 (P307335-11) Soil	Sampled: 07/16/03 11:00	Received:	07/16/03	14:25				VASSA VASSA	17.77
Hexavalent Chromium	ND	0.025	mg/l	5	3070608	07/31/03	07/31/03	EPA 7196	R-01
A20-BML04 (P307335-12) Soil	Sampled: 07/16/03 11:30	Received:	07/16/03	14:25					20.70
Hexavalent Chromium	ND	0.025	mg/l	5	3070608	07/31/03	07/31/03	EPA 7196	R-01
A20-BML03 (P307335-13) Soil	Sampled: 07/16/03 12:00	Received:	07/16/03	14:25					
Hexavalent Chromium	ND	0.025	mg/l	5	3070608	07/31/03	07/31/03	EPA 7196	R-01

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 1, 2003

LDC Report Date: November 12, 2003

Matrix: Soil

Parameters: Metals

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308047

Sample Identification

32D-SB07-5 32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within OC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
32D-SB07-5MS/MSD (32D-SB07-5, 32D-SB07-10)	Antimony Calcium Copper	38 (80-120) 91 (80-120) 51 (80-120)	39 (80-120) 78 (80-120) 85 (80-120)	12 (20) 15 (20) 13 (20)	J detects, UJ nondetects	A
	Zinc	205 (80-120)	137 (80-120)	11 (20)	J detects	

Matrix spike recoveries for aluminum, barium, iron, magnesium, manganese, potassium, and 3

titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample 32D-SB07-5, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS

Lead - Data Qualification Summary - SDG P308047

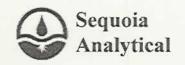
SDG	Sample	Analyte	Flag	A or P	Reason
P308047	32D-SB07-5 32D-SB07-10	Antimony, Calcium, Copper	J detects, UJ nondetects	A	Matrix spike/matrix spike duplicate % recoveries below control limits
P308047	32D-SB07-5 32D-SB07-10	Zinc	J detects	A	Matrix spike/matrix spike duplicate % recoveries above control limits

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308047

No Sample Data Qualified in this SDG





Project: Aerojet RI/FS

P308047 Reported:

Project Number: N/A Project Manager: Bruce Lewis

09/09/03 16:33

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes	DV Qu
32D-SB07-5 (P308047-02) Soil	Sampled: 08/01/0	3 09:50	Received:	08/01/03	14:07					-	uu
Silver	ND		0.34	mg/kg	1	3080076	08/08/03	08/11/03	EPA 6010B		
Aluminum	15000		24	**	"		"	"	"		
Arsenic	4.3		0.48	*	5		"	08/26/03	EPA 6020		
Boron	ND		4.8		1	*		08/11/03	EPA 6010B		
Barium	100		0.48			**	w	11	11		
Beryllium	0.36		0.048	**	**	*	**		**		
Calcium	2400		48		**	**	**	.00	29.		
Cadmium	ND		0.48		**	"		"	*		
Cobalt	9.4		0.34				"		**		
Chromium	41		0.48	**		*	"	10	*		
lexavalent Chromium	ND		0.21		"	3080258	08/14/03	08/15/03	EPA 7196A		u-
Copper	57		0.96		"	3080076	08/08/03	08/11/03	EPA 6010B		u-
ron	21000		24					**	**		
Mercury	0.13		0.017		***	3080172	08/13/03	08/14/03	EPA 7471A		
otassium	1500		120			3080076	08/08/03	08/11/03	EPA 6010B		
Magnesium	4900		24						*		
Manganese	330		0.48		**				**		
Molybdenum	2.4		0.96		**	**	.11		**		
Sodium	220		24		"	**	"		**		
Nickel	33		1.4		**		"				
Lead	4.4		0.24				,,	08/21/03	EPA 6020		
Antimony	ND		0.24								UJ
Selenium	ND		0.48			*		08/22/03			
Citanium	660		0.96					08/11/03	EPA 6010B		
Challium	0.098		0.096		m1	п		08/21/03	EPA 6020		
Vanadium	46		0.48			**	38	08/11/03	EPA 6010B		
Zinc	63		0.96								J

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.





Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis

P308047 Reported: 09/09/03 16:33

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-10 (P308047-03) Soil	Sampled: 08/01/	Received	Received: 08/01/03 14:07							
Silver	ND		0.32	mg/kg	1	3080076	08/08/03	08/11/03	EPA 6010B	
Aluminum	8300		23	**	"	"	**			
Arsenic	11		0.45	W	5	**	**	08/26/03	EPA 6020	
Boron	ND		4.5		1		**	08/11/03	EPA 6010B	
Barium	54		0.45				"	"		
Beryllium	0.20		0.045		**	*	"	*		
Calcium	2000		45	**		*	**	*		
Cadmium	ND		0.45	**	**	**	**	-	**	
Cobalt	4.6		0.32		**	**	.11	900	196	
Chromium	18		0.45				"		*	
Hexavalent Chromium	ND		0.21	**	**	3080258	08/14/03	08/15/03	EPA 7196A	U
Copper	32		0.90			3080076	08/08/03	08/11/03	EPA 6010B	
Iron	14000		23		"		"		"	
Mercury	ND		0.019	10		3080172	08/13/03	08/14/03	EPA 7471A	
Potassium	1100		110			3080076	08/08/03	08/11/03	EPA 6010B	
Magnesium	3200		23		n			"		
Manganese	160		0.45							
Molybdenum	ND		0.90		41		**			
Sodium	220		23						**	
Nickel	16		1.4	10	17	H		:00	"	
Lead	2.2		0.23	**			.96	08/21/03	EPA 6020	
Antimony	ND		0.23						- "	
Selenium	ND		0.45					08/22/03	*	
Fitanium	360		0.90		,,	"		08/11/03	EPA 6010B	
Thallium	ND		0.090	**				08/21/03	EPA 6020	
Vanadium	30		0.45					08/11/03	EPA 6010B	
Zinc	40		0.90			u,			"	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 4, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Hexavalent chromium

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5 32D-SB06-15

P308071 CR6

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

Date	Lab. Reference/ID	Analyte	%R (Limits)	Associated Samples	Flag	A or P
8/15/2003	CCV (ending)	Hexavalent chromium	111 (80-110)	32D-SB07-2.5 32D-SB06-15	J detects	Р

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
32D-SB07-2.5 (32D-SB07-2.5 32D-SB06-15)	Hexavalent chromium	66 (75-125)	65 (75-125)	2 (20)	J detects UJ nondetects	A

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

3

P308071 CR6

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Wet Chemistry - Data Qualification Summary - SDG P308071

SDG	Sample	Analyte	Flag	A or P	Reason
P308071	32D-SB07-2.5 32D-SB06-15	Hexavalent chromium	J detects	P	CCV above criteria
P308071	32D-SB07-2.5 32D-SB06-15	Hexavalent chromium	J detects UJ nondetects	A	Matrix spike % Recovery below control limits

Aerojet RI/FS

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308071

No Sample Data Qualified in this SDG

P308071 CR6 5

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 5, 2003

LDC Report Date: November 17, 20033

Matrix: Soil

Parameters: Hexavalent chromium

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5 32D-SB05-7

P308126 CR6

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

P308126 CR6



P308126 CR6 4

Aerojet RI/FS Wet Chemistry - Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

Aerojet RI/FS Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

5

P308126 CR6

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 15, 2003

LDC Report Date: November 17, 20033

Matrix: Soil

Parameters: Hexavalent chromium

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308354

Sample Identification

10D-SS10

10D-SS21

10D-SS22

P308354 CR6

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
10D-SS10 10D-SS21 10D-SS22	Hexavalent chromium	41/3	30/7	J detects UJ nondetects	Р

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
10D-SS10	Hexavalent chromium	52 (75-125)	54 (75-125)	4 (20)	J detects UJ nondetects	A

b. Laboratory Control Samples

P308354 CR6 3

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Wet Chemistry - Data Qualification Summary - SDG P308354

SDG	Sample	Analyte	Flag	A or P	Reason
P308354	10D-SS10 10D-SS21 10D-SS22	Hexavalent chromium	J detects UJ nondetects	P	Analysis performed past holding time
P308354	10D-SS10 10D-SS21 10D-SS22	Hexavalent chromium	J detects UJ nondetects	A	Matrix spike % Recovery below control limits

Aerojet RI/FS

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308354

No Sample Data Qualified in this SDG

P308354 CR6 5

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 14, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Hexavalent chromium

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308355

Sample Identification

11D-SNS09

11D-SNS08

11D-SNS07

P308355 CR6

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
11D-SNS09 11D-SNS08 11D-SNS07	Hexavalent chromium	38/2	30/7	J detects UJ nondetects	P

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
11D-SNS09	Hexavalent chromium	25 (75-125)	24 (75-125)	4 (20)	J detects R nondetects	A

3

P308355 CR6

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Wet Chemistry - Data Qualification Summary - SDG P308355

SDG	Sample	Analyte	Flag	A or P	Reason
P308355	11D-SNS09 11D-SNS08 11D-SNS07	Hexavalent chromium	J detects UJ nondetects	P	Analysis performed past holding time
P308355	11D-SNS09 11D-SNS08 11D-SNS07	Hexavalent chromium	J detects R nondetects	A	Matrix spike % Recovery below 30%

Aerojet RI/FS

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308355

No Sample Data Qualified in this SDG

P308355 CR6 5

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 15, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Hexavalent chromium

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P309311

Sample Identification

10D-SS10

10D-SS21

10D-SS22

P309311 CR6

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

Sample	Analyte	Total Days From Sample Collection Until Analysis	Required Holding Time (in Days) From Sample Collection Until Analysis	Flag	A or P
10D-SS10 10D-SS21 10D-SS22	Hexavalent chromium	66/0	30/7	J detects R nondetects	Р

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
P309262-01 (10D-SS10 10D-SS21 10D-SS22)	Hexavalent chromium	60 (75-125)	16 (75-125)	61 (20)	J detects R nondetects	A

3

P309311 CR6

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS Wet Chemistry - Data Qualification Summary - SDG P309311

SDG	Sample	Analyte	Flag	A or P	Reason
P309311	10D-SS10 10D-SS21 10D-SS22	Hexavalent chromium	J detects R nondetects	P	Analysis performed past holding time
P309311	10D-SS10 10D-SS21 10D-SS22	Hexavalent chromium	J detects R nondetects	A	Matrix spike % Recovery below 30%

Aerojet RI/FS

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P309311

No Sample Data Qualified in this SDG

P309311 CR6 5

ERM/Aerojet Data Validation Reports LDC# 0310-02F8 through 0310-02L8

Total Petroleum Hydrocarbons as Diesel

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: July 29, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Diesel

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308004

Sample Identification

37D-SB01-2.5 37D-SB01-6

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

X. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308004

No Sample Data Qualified in this SDG

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary - SDG P308004

No Sample Data Qualified in this SDG





Environmental Resources Management 2525 Natomas Park Drive, Suite 350 Sacramento CA, 95833

Project: Aerojet RI/FS Project Number: N/A

P308004 Reported: 08/19/03 16:23

Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B Sequoia Analytical - Petaluma

Project Manager: Bruce Lewis

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
37D-SB01-2.5 (P308004-03) Soil S	Sampled: 07/2	9/03 10:20	Received	: 07/29/03	3 17:05					
Diesel Range Organics (C10-C28)	24		5.0	mg/kg	1	3080068	08/05/03	08/07/03	EPA 8015B-SVOA	
Surrogate: Octacosane		174%	52-13	33		"	: # .	"		S-02
37D-SB01-6 (P308004-04) Soil Sa	mpled: 07/29/	03 10:39	Received:	07/29/03	17:05					
Diesel Range Organics (C10-C28)	6.2		5.0	mg/kg	1	3080068	08/05/03	08/07/03	EPA 8015B-SVOA	
Surrogate: Octacosane		120 %	52-13	33		**	**	*		
37D-SB01-10 (P308004-05) Soil S	ampled: 07/29	9/03 10:46	Received	07/29/03	17:05					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080068	08/05/03	08/07/03	EPA 8015B-SVOA	
Surrogate: Octacosane		97 %	52-13	33		***	"	"		
37D-SB01-15E (P308004-06) Water	Sampled:	07/29/03 11	:00 Recei	ved: 07/2	9/03 17:05	5				
Diesel Range Organics (C10-C28)	ND		0.050	mg/l	1	3080053	08/05/03	08/07/03	EPA 8015B-SVOA	
Surrogate: Octacosane		108 %	54-14	11		"	"	"	**	
37D-SB01-15 (P308004-07) Soil S	ampled: 07/29	9/03 11:11	Received	07/29/03	17:05					
Diesel Range Organics (C10-C28)	5.7		5.0	mg/kg	1	3080068	08/05/03	08/07/03	EPA 8015B-SVOA	
Surrogate: Octacosane		119%	52-1	33		"	(#1	"		
37D-SB01-20 (P308004-08) Soil S	ampled: 07/29	9/03 11:32	Received	: 07/29/03	17:05					
Diesel Range Organics (C10-C28)	18		5.0	mg/kg	1	3080068	08/05/03	08/07/03	EPA 8015B-SVOA	
Surrogate: Octacosane		156 %	52-1.	33		"	(#)	"	н	S-02
37D-SB01-25 (P308004-09) Soil S	Sampled: 07/29	9/03 11:56	Received	: 07/29/03	17:05					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080068	08/05/03	08/07/03	EPA 8015B-SVOA	
Surrogate: Octacosane		97%	52-1.	33		"		#	"	

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 1, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Diesel

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308047

Sample Identification

32D-SB07-5

32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits, with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
P308047-09 (32D-SB07-5, 32D-SB07-10)	TPH as Diesel	89 (60-140)	161 (60-140)	55 (30)	J detects, UJ nondetects	A

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

X. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308047

SDG	Sample	Compound	Flag	A or P	Reason
P308047	32D-SB07-5, 32D-SB07-10	TPH as Diesel	J detects, UJ nondetects	A	Matrix spike % recovery and RPD above QC limits

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary - SDG P308047

No Sample Data Qualified in this SDG



Environmental Resources Management 2525 Natomas Park Drive, Suite 350 Sacramento CA, 95833 Project: Aerojet RI/FS

Project Number: N/A

Project Manager: Bruce Lewis

P308047 Reported: 09/09/03 16:33

Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-5 (P308047-02) Soil San	npled: 08/01	/03 09:50	Received:	08/01/03	14:07					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080254	08/14/03	08/23/03	EPA 8015B-SVOA	
Surrogate: Octacosane		103 %	52-1.	33		"	"	"	W.	
32D-SB07-10 (P308047-03) Soil Sa	mpled: 08/0	01/03 10:05	Received	08/01/03	14:07					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080254	08/14/03	08/23/03	EPA 8015B-SVOA	
Surrogate: Octacosane		97%	52-1.	33		"	"	"	"	
32D-SB07-30 (P308047-04RE1) Soil	Sampled:	08/01/03 11	:15 Rece	ived: 08/0	01/03 14:0	7				
Diesel Range Organics (C10-C28)	5.2		5.0	mg/kg	1	3080553	08/27/03	08/29/03	EPA 8015B-SVOA	HT-03
Surrogate: Octacosane		80 %	52-1.	33		"	"	"	"	
32D-SB07-35 (P308047-05) Soil Sa	mpled: 08/0	01/03 11:40	Received	08/01/03	3 14:07					
Diesel Range Organics (C10-C28)	16		5.0	mg/kg	1	3080254	08/14/03	08/23/03	EPA 8015B-SVOA	
Surrogate: Octacosane		153 %	52-1.	33		"	"	"	"	S-02
32D-SB07D-35 (P308047-06) Soil S	Sampled: 08	3/01/03 11:4	0 Receive	d: 08/01/	03 14:07					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080254	08/14/03	08/23/03	EPA 8015B-SVOA	
Surrogate: Octacosane		77%	52-1.	33		"	"		"	
32D-SB07-40E (P308047-07) Water	Sampled:	08/01/03 11	:50 Rece	ived: 08/0	01/03 14:0	7				
Diesel Range Organics (C10-C28)	0.052		0.050	mg/l	1	3080087	08/06/03	08/07/03	EPA 8015B-SVOA	В
Surrogate: Octacosane		106%	54-1	41		"	"	"	"	
32D-SB07-40 (P308047-08) Soil Sa	mpled: 08/0	01/03 12:05	Received	: 08/01/03	3 14:07					
Diesel Range Organics (C10-C28)	30		5.0	mg/kg	1	3080254	08/14/03	08/23/03	EPA 8015B-SVOA	
Surrogate: Octacosane		156 %	52-1.	33		er .	"	"	"	S-02

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 4, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Diesel

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5

32D-SB06-15

P308071 DIESEL

1

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

Sample	Surrogate	%R (Limits)	Compound	Flag	A or P
32D-SB07-2.5	Octacosane	366 (52-133)	Diesel	J detects	A

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

3

P308071 DIESEL

Spike ID (Associated Samples)	(Associated		MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
P30847-9	Diesel	89 (62-103)	161 (62-103)	55 (35)	J detects	A

Since the parent sample was not one of the samples reviewed in this SDG, no data were qualified.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

4

X. Field Blanks

No samples were identified as a rinsate. Therefore this parameter was not evaluated.

P308071 DIESEL

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308071

SDG	Sample	Compound	Flag	A or P	Reason
P308071	32D-SB07-2.5	Diesel	J detects	A	Surrogate above control limits

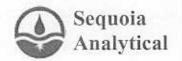
Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary - SDG P308071

No Sample Data Qualified in this SDG

P308071 DIESEL 5





Environmental Resources Management 2525 Natomas Park Drive, Suite 350 Sacramento CA, 95833

Project: Aerojet RI/FS

Project Number: N/A Project Manager: Bruce Lewis P308071 Reported: 09/09/03 16:50

Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B Sequoia Analytical - Petaluma

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
32D-SB07-2.5 (P308071-01) Soil	Sampled: 08/0	4/03 09:05	Received	: 08/04/03	3 14:17					30 G
Diesel Range Organics (C10-C28)	14		3.1	mg/kg	4	3080254	08/14/03	08/25/03	EPA 8015B-SVOA	7
Surrogate: Octacosane		366 %	52-13	33		9#0	7/		"	S-02
32D-SB07-15 (P308071-02) Soil	Sampled: 08/0	4/03 09:20	Received	08/04/03	14:17					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	4	3080254	08/14/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		123 %	52-1:	33			75		#	
32D-SB06-2.5 (P308071-03) Soil	Sampled: 08/0	4/03 12:05	Received	: 08/04/0	3 14:17					
Diesel Range Organics (C10-C28)	6.0		5.0	mg/kg	1	3080254	08/14/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		154 %	52-1.	3.3			"	7.56	*	S-02
32D-SB06-10 (P308071-04) Soil	Sampled: 08/0	4/03 12:30	Received	: 08/04/03	14:17					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080254	08/14/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		126 %	52-1.	33					"	
32D-SB06-15E (P308071-05) Wa	ter Sampled:	08/04/03 12	:40 Rece	ived: 08/0	4/03 14:1	7				
Diesel Range Organics (C10-C28)	0.078		0.052	mg/l	1	3080174	08/11/03	08/18/03	EPA 8015B-SVOA	1-11
Surrogate: Octacosane		97 %	54-1	41				*	7.	
32D-SB06-15 (P308071-06) Soil	Sampled: 08/0	4/03 12:45	Received	: 08/04/03	14:17					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	I.	3080254	08/14/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		131 %	52-1	33		1.00	*	(60)		
32D-SB06-25 (P308071-07) Soil	Sampled: 08/0	4/03 13:10	Received	: 08/04/03	3 14:17					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	E.	3080254	08/14/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		121 %	52-1	33		2	-	*		

11/14/03

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name: Aerojet RI/FS

Collection Date: August 5, 2003

LDC Report Date: November 17, 2003

Matrix: Soil

Parameters: Total Petroleum Hydrocarbons as Diesel

Validation Level: EPA Level III Equivalent

Laboratory: Sequoia

Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5

32D-SB05-7

P308126 DIESEL

1

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

3

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

X. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

4

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

5

P308126 DIESEL





Environmental Resources Management 2525 Natomas Park Drive, Suite 350 Sacramento CA, 95833 Project: Acrojet RI/FS Project Number: N/A Project Manager; Bruce Lewis P308126 Reported: 09/11/03 18:20

Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B Sequoia Analytical - Petaluma

Annlyte	Result	MDL	Reporting Limit	Units	Dilution	finich	Prepared	Analyzed	Method	Notes
32D-SB06-35 (P308126-01) Soil	Sampled: 08/6	04/03 14:50	Received	: 08/05/03	3 13:17					
Diesel Range Organies (C10-C28)	ND		5.0	mg/kg	(1)	3080306	08/18/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		83 %	52-1	33				050		
32D-SB06-40 (P308126-02) Soil	Sampled: 08/0	4/03 15:10	Received	: 08/05/03	3 13:17					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080306	08/18/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		87 %	52-1	3.3			W	140		
32D-SB06-45 (P308126-03) Soil	Sampled: 08/0	14/03 15:30	Received	: 08/05/0	3 13:17					
Diesel Range Organics (C10-C28)	ND		5.0	ing/kg	48	3080306	08/18/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		95.96	52-1	33		0.00		-		
32D-SB05-2,5 (P308126-04) Soil	Sampled: 08/	05/03 10:15	Receive	d: 08/05/0	3 13:17					
Diesel Range Organics (C10-C28)	ND		5.0	mg/kg	1	3080306	08/18/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacusane		95 %	52-1	33		(44)		1.00	**	
32D-SB05-7 (P308126-05) Soil	Sampled: 08/05	5/03 10:25	Received:	08/05/03	13:17					
Diesel Range Organies (C10-C28)	ND		5.0	mg/kg	1	3080306	08/18/03	08/25/03	EPA 8015B-SVOA	
Surrogate: Octacosane		90 %	52-1	33		0.0		7		
32D-SB05-10 (P308126-06) Soil	Sampled: 08/0	05/03 10:30	Received	1: 08/05/03	3 13:17					
Diesel Range Organics (C10-C28)	6.7		5.0	mg/kg	1	3080306	08/18/03	08/26/03	EPA 8015B-SVOA	
Surrogate: Octavosane		105 %	52-1	33				-		
32D-SB05-15 (P308126-07) Soil	Sampled: 08/0	05/03 10:45	Received	1: 08/05/0	3 13:17					
Diesel Range Organies (C10-C28)	ND		5.0	mg/kg	10	3080306	08/18/03	09/02/03	EPA 8015B-SVOA	
Surrogute: Octocosane		95 %	52-1	33		507		- 10		